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# Illinois Medical Journal

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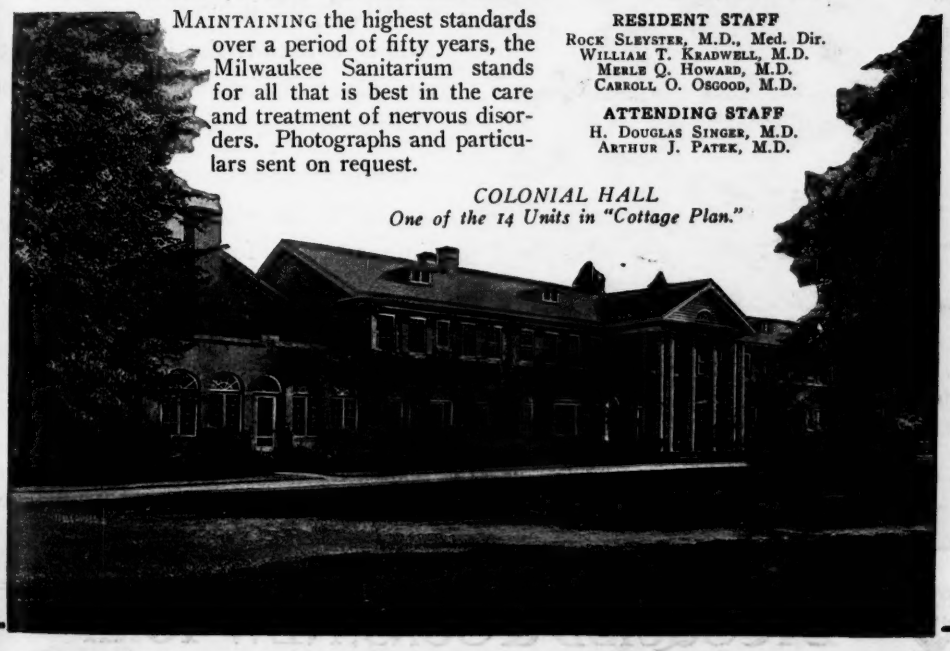

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## Editorials

### VITAMIN NEEDS AND POSSIBILITIES IN MEDICAL PRACTICE

Vitamin therapy occupies a place in the sun and demands rightful recognition of therapeutic values of these recently appreciated chemical substances.

To be specific, it is as late as 1914 that these life-giving chemical compounds were isolated by a Polish physician, Dr. Casimir Funk, following along the way, if not in the footsteps of Eijkman, a Dutch physician in Java, who in 1897 exploited the theory that food substances and disease might be correlative.

Since Funk's discovery, the exact nature, scope and practicability of vitamins and their usage have been the subject of intensified research and the object of expenditure of hundreds of thousands of dollars. To date, six definitely clear vitamins have been positively identified. Presence or deficiency of these elements, according to their presence or absence in the human diet and subsequent absorption into the metabolic processes of the body has been proven by extensive clinical experience as well as by experimentation upon both humans and animals to tilt the scale in favor of health or disease. It has been ascertained that the efficacy of citrus fruit as a scurvy preventive, learned about in 1747 by James Lind, surgeon in the Royal British Navy, was merely an instance of restoring Vitamin C to the sailors to repair dietary damage caused by the loss of fresh foods.

*Demonstrated valuable, and—possibly indis-*pensable—in the prevention and treatment of deficiency and degenerative diseases, this discovery and utilization of the vitamins marks another step in the unceasing progress of science, especially in its ramifications for the medical profession. It marks, too, another stride in those ways leading medicine to the point of self-destruction, which is inevitable. When the day arrives when prophylactic medicine usurps curative medicine, there will remain for the hands and minds of physicians only those mechanical mis-

haps of the human frame, such as broken bones, ruptured or misplaced organs, mutilated members and other accidental crimes against perfect health.

Probably no revelation in the structure and functioning of vital phenomena, since Harvey's discovery of the circulation of the blood and not even excepting the virtues of allergy, of endocrinology or of radioactivity have attracted so much attention in scientific circles.

Intimation that the vitamins hold in their aggregate the fundamental secret of the actual substance of life is not beyond possibility of proof, improbable as this extraordinary claim may appear upon first suggestion.

Vitamin authorities state positively that Vitamin E plays a definite role in reproduction. Some even go so far as to claim that Vitamin E may be a factor in sex-predetermination. Incompleted work in progress suggests strongly that this "sex vitamin E" acquires the important clinical role of predetermining sex. Numerous authoritative scientists concur that the bulk of vitamin research conclusions set forth by the laboratories to the medical profession rest upon definite scientific basis.

The study of vitaminology would appear to be an urgent demand upon the time of the general practitioner. Here is an hypothesis, so direct, and so simple in its clauses, and based upon both clinical and laboratorial findings that its demonstrations are manifest in the every day experiences of every doctor.

For years doctors have been giving Vitamin D in viosterol or the more primitive fish liver oils, in the prevention and cure of rickets. Effort to implant this vitamin in other foods is being demonstrated through the currently popular and partially commercialized irradiation of grain, milk, yeast and milk powder with varying success.

Spectacular results from Vitamin D in ricket prevention and cure are comparable to miraculous cures of beri-beri, polyneuritis, and pellagra from Vitamin B and G; the aforementioned routing of scurvy by Vitamin C; and the almost magical powers of Vitamin A in xerophthalmia, or that dryness of the conjunctiva, which under this infection loses its lustre and becomes skin-like. Equally potent are almost innumerable virtues in the way of prevention and cure of so-called diseases attributed to the various vitamins.

The mass of proof mounts daily higher and higher that possibly the earnest humble Funk, and the pioneering Eijkman may have unwittingly hit up "that single Alif that is the clue," to the entire theory of the creation of life. Because of fascinating disclosures, often remarkable results and sometimes nearly magical effects, it behooves every legitimate, ethical practitioner to learn thoroughly and with the greatest exactitude and care the details and positive evidence presented by experimentation and experience in vitamin therapy. For the man who has been diffident in this regard there is a great awakening. For many men it will prove a difficult re-adjustment of procedure in treatment, to discard as disease factors such positive agents as toxins and to replace them with what has been aptly termed "causation prefixed by a minus sign."

This theory of deficiency causation of disease is not a passing mirage, therefore, the entire scheme of therapeutic medicine faces most drastic revision.

And it is to be emphasized that vitamin therapy of all others is not a matter for self-medication on the part of its recipients, nor a public panacea for indiscriminate peddling on the part of the laity.

---

## DINITROPHENOL SALE TO THE PUBLIC SHOULD BE PROHIBITED

Craze for excessive slenderness among women continues to boost the death rate. There is no royal road for discarding adipose tissue no matter what the advertisements say, and foolish indeed are those females who follow the promises held out by the get-thin-quick-methods.

Dinitrophenol holds for many individuals such definite danger and high toxicity that it should never be self-administered and even when given by physicians, should never be prescribed without adequate warning to the general public, and especially to the patient, of the peril involved. So treacherous is the action of dinitrophenol that its administration should always be under the control of a physician. Investigators announce that human beings have a more variable and unpredictable susceptibility to dinitrophenol, even more so than do animals and that even the scant

amount of evidence available indicates that this special susceptibility to the drug is far more frequent than drug sensitivity as applied to most other medical preparations.

Since this is a drug used in cosmetology, the field of exploitation of dinitrophenol is crowded with commercial interests. Without a doubt a great many persons everywhere are taking dinitrophenol both without and with their own knowledge and that of their physicians. Only recently the A. M. A. reported two cases of sudden death from poisoning by dinitrophenol.

In one of these cases a young woman procured for herself a dinitrophenol preparation from a druggist and took it without medical instruction.

The druggist who sold the stuff placed instructions on the label. Now apparently a safe daily dosage would be from 3 to 5 mg. per kilogram of body weight. The patient began with a daily dosage of 180 mg. and on the fifth day was taking 720 mg. On the seventh day she died. In accordance with instructions from the druggist this patient took these doses, first day, 3 grains; second day, 6 grains; third day, 9 grains; fourth and fifth days, 12 grains each; sixth day, 6 grains.

Even so it had been thought that even such tremendous and obviously excessive doses were what had been supposed to be well below the limit of fatal dosage, based on animal experimentation.

Now the dangers of dinitrophenol should be explicitly disseminated to the public. Especially is this a paramount duty to those public health commissioners who use the radio for broadcasting. Here is where the general public needs to know the results of this drug, just as the general public was warned away from live wires in the early days of electricity. Physicians using the drug in private practice should not minimize its perils. Patients should be warned to be on the lookout for such dangerous manifestations as increased temperature, or severe urticaria and pruritus, any of which character of symptoms demand immediate discontinuance of the usage of dinitrophenol.

It seems that a so-called health commissioner saw fit to exploit over the radio this dangerous dinitrophenol to the public at large with its well-known mania for self-dosage and for experiment with proprietary and much advertised products.

Unfortunately, almost always the title of "Public Health Commissioner" carries scientific weight with the laity. God only knows how much damage has been done by scattering literally to the four winds of heaven a practically unqualified endorsement of an article containing one of the elements of TNT. Dinitrophenol undoubtedly has its place in the pharmacopea but certainly not a niche on the pantry shelf or the bathroom cabinet. The drug itself is uncertain in its reactions and when this tendency is coupled with the uncertainty of combined reaction both inherent in the drug and inherent in the person who takes the drug, the scientific mind, if not the lay mind, can comprehend why dinitrophenol, no less than bichloride of mercury or strychnine literally should not be placed in the hands of women and children! Only practicing physicians who are able to control and to observe such dangerous remedies should ever prescribe them, let alone sponsor them wholesale in radio talks.

A campaign would seem to be called for that will emphasize both to the profession and to the laity the variable yet extreme toxicity of dinitrophenol, a compound related closely to TNT or trinitrotoluol.

During the World War proof was plentiful as to the marked toxicity of all such related products.

Dinitrophenol is much in the public eye at the moment. This chemical has been stressed as a compound of high value as a metabolism raising agent, through acceleration of oxidative processes. Under ordinary conditions fat is oxidized seemingly without development of acidosis.

But this drug has only a narrow margin between a dosage that is toxic and one that is therapeutic. It seems to be excreted with a fair degree of rapidity by the kidneys but not without extensive liver damage and much pigmentation of the skin. Tubular nephritis has been discovered, however, along with other renal damage.

Unfortunately, dinitrophenol will oxidize fat with speed, even though it does so with danger. And as to its dangers the public must be informed.

Far too many persons have already died or become invalided from the effects of "getting rid of that ugly fat."

## A LAYMAN'S VIEW, OR NO NRA FOR PHYSICIANS

Few, if any unskilled laborers put in the hours of unremitting toil that fall to the lot of the general practitioner. For the physician by the very nature of his task, let alone the humanitarian aspect of his business, there is neither wage scale, nor code for working conditions nor general subsidy. The average physician, while customarily regarded as anything but a "worker," really labors like a peon.

Yet it is seldom that this situation is appreciated as in the editorial appearing first in the *"Northwest Progress,"* of Seattle, Wash., and reprinted later in *"The New World"* of Chicago, and which reads under the heading "A Layman's View," or "No NRA for Physicians."

"One class of workers who have suffered from the depression have uttered no complaints, have asked for no relief and have been given no consideration in the program of national recovery. Physicians seldom are regarded as workers, yet few occupations entail more hard work than that of the average conscientious physician. His working hours are not limited, there is no wage scale for the physician, nor is he protected by any law regulating his working conditions. The physician must serve first and worry about his recompense afterwards. Such is the tradition of medicine and many are faithful to that tradition.

"It is true the medical profession is a humanitarian business and physicians do not take up the profession as a business from which to obtain a profit. For all this, however, the physician must eat, must be clothed and if he has a family it must be supported. He cannot do this unless those who make use of his skill recompense him. The sick must be served and according to the tradition the physician cannot refuse his service. He cannot keep one eye on his patient and the other on his pocket book. In many cases the physician knows that the financial condition of the patient is such he can pay an inadequate recompense or no recompense at all for the service he has received. This is an act of charity on the part of the physician, but it is obvious his charity in this way must be limited or the physician could not live. The physician engaged in general practice must have a regard for his professional duty to his fee-paying patients as well as to those who are destitute.

"Complaint, sometimes not without reason, has been lodged against the high fees charged by specialists. If they are to be specialists their fees must in most cases be higher than the fee of the general practitioner. The practice of the specialist is more limited and his responsibility greater than that of the general practitioner. Nor is the specialist always recompensed for his work. It is not unusual for him to engage in clinical work for which he receives no recompense. On the lowest basis the right of the physician to receive his fee is based on justice. The fee due the physician is a debt and payment is excused only for the same reasons that excuse the payment of other debts. The fee of the physician should be paid promptly and if possible liberally. This will be an act of charity, not to the physician, but because a liberal fee enables him to give his services free of cost to those unable to pay. Holy Scripture bids us honor the physician. The honor he and his destitute patients best appreciate is a goodly fee."

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## WE MUST NOT DESTROY THE RELATION BETWEEN PATIENT AND DOCTOR

From every side comes additional confirmation of the master menace to medicine, state medicine and federal rule, against which the ILLINOIS MEDICAL JOURNAL and its editor have waged such continuous warfare for the last thirty years.

This time the public protest comes from the president of the American Medical Association, Dr. Walter L. Bierring of Des Moines, Iowa. Speaking in Oklahoma City, Okla., on Oct. 29, 1934, at a dinner in his honor, Dr. Bierring said in part:

"The medical profession has at all time adapted itself to the needs of the society which it helped build. We are awaiting curiously an announcement from the advisory committee of doctors named by President Roosevelt's committee on economic security. And we should be apprehensive of the fact that two non-medical statisticians in Washington are making a survey of health insurance needs.

"No survey yet had indicated the requirement of compulsory health insurance in this country.

We must not destroy the existing relations between patient and doctor."

## DOCTORS' VERSUS LAWYERS' FEES

If a physician charged a patient the sum of $14,133, for saving a life, oh, what a howl would go up the nation over from "welfarers" and reformers!

Yet only recently a barrister of Chicago complacently received that amount for his services in aiding the victim of an automobile accident recover from an insurance company the sum of $42,500 for injuries received in an automobile accident.

The plaintiff, a nurse at a prominent hospital in Chicago sustained serious injuries and brought suit for something like $50,000. Motion for an appeal was overruled by the judge in the case, and the bill was paid in full.

The case was in court for something like three days and the compensation for this active service on the attorney's part was the amount mentioned above, or $14,133.

Of course that three days' service in court does not take into account the years of preparation the lawyer spent before he secured the technical knowledge and the legal skill to present the facts of the matter so that justice was done his client.

But neither do the hours of service in office calls, or in from an hour to a week's constant vigil at many a sick bed indicate the years and the strength that a physician has expended so that he has obtained the experience, the skill and the medical technique and knowledge that enables him to save a life, or to make a diagnosis and to prescribe the remedial measures. Now doctors, by actual statistics, furnish in straight charity per annum some $375,000,000 of services. Of the amounts they put on the books there is an equal amount that they do not expect to collect, and in this non-collection are rarely disappointed. Yet everywhere is heard the wail of reformers that doctors must cut down their fees.

How many physicians are there in the United States who collect annual fees of $14,000, which the lawyer in this case received in the course of less than a week?

It is interesting to note that the three surgeons who rendered the medical and surgical service and necessary attention needed to save the nurse's life received all told less than five hundred dollars.

## DOCTORS DESIRING TO PRESENT PAPERS AT THE 1935 ANNUAL MEETING OF THE ILLINOIS STATE MEDICAL SOCIETY

Members desiring to present papers at the 1935 Annual Meeting to be held in Rockford, on May 21, 22, 23, 1935, should write to the chairman or secretary of the section before which they desire to appear.

It is desired that all papers to be presented should be practical and not merely presented as a "hobby" of an individual physician. It is desired that a request to appear on the program before any section should be sent as early as possible to the chairman or secretary, and with the request, a synopsis of the material which the member would like to present.

We are herewith giving the name and address of the chairman and secretary of each section.

If a down state member desires to present a paper it would be preferable for him to write to the down state section officer, while the Chicago Medical Society members should write to the C. M. S. officer.

It is the desire of each section to arrange the programs well in advance of the meeting, as they will begin to arrange their respective programs soon after the first of January.

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The Annual Secretaries Conference will be held on Tuesday, May 21, at 10:00 A. M. Any secretary having suggestions as to the character of program or the presenting of papers should get in touch with Dr. Donald W. Killinger, Secretary of the Secretaries' Conference, Joliet, Illinois, as it is the desire of the officers of the Conference to have an outstanding program which will appeal to all officials of county medical societies as well as to the membership in general.

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W. L. Crawford, Chairman.....Rockford
A. B. Owen.....Rockford
H. R. Searle.....Rockford

LADIES' GOLF COMMITTEE

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Mrs. J. Thiell.....Rockford

VETERAN'S COMMITTEE

R. Bourland, Chairman.....Rockford
C. Bartling.....Rockford
N. Sheehe.....Rockford
W. Ives.....Rockford

COLORED RECEPTION COMMITTEE

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PEDIATRICS COMMITTEE

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J. H. Garthe.....Rockford
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SECRETARIES CONFERENCE COMMITTEE

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INDUSTRIAL SURGERY COMMITTEE

C. A. Cibelius, Chairman.....Rockford
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C. V. Urbom.....Rockford
E. S. Murphy.....Dixon
J. A. Johnston.....Byron
A. Ickstadt.....Kirkland
R. L. Walgreen.....Caledonia
R. Lins.....Durand
Dr. Beebe.....Stillman Valley

## DR. MARTIN OTIS HECKARD

Martin Otis Heckard was born May 23, 1863, in Cuba, Ill., son of Jacob W. and Mary E. (Kimball) Heckard. School, Cuba high, B. S., Northern Indiana Normal, Valparaiso; M. D., Bellevue Hospital Medical College (N. Y. Univ.), 1893.

Married Lenore P. Pfau of Chicago, Feb. 14, 1906.

Practiced in Chicago, professor of physiology, N. W. Dental College, 1894-98.

Entered inspection service of Department of Health, May 1, 1893. Was appointed registrar of vital statistics, Feb. 19, 1895, and Bureau Chief, Jan. 20, 1899. Later his title was changed to Bureau Chief of Vital Statistics.

Member of Chicago and Illinois State Medical Societies. Fellow of American Medical Association and member of American Public Health Association. Chairman of first commission on forms, methods and statistical procedure of section of vital statistics of A. P. H. A. He formulated the Rules for Statistical Practice adopted by the Association at Winnipeg, in 1898. (See Bulletin 108, Bureau of the Census, 1909, page 32.)

There were two crises during his term as Registrar. 1. The Iroquois Theater Fire, Dec. 30, 1903, with 582 deaths. 2. The Eastland disaster, July 24, 1915, with 811 deaths.

These special occurrences naturally caused Dr. Heckard great anxiety and added enormously to his duties.

His name as registrar appears on more than a million death certificates and almost as many birth certificates. From 1909 to 1915 the births were recorded by the County Clerk.

His death occurred in Illinois Masonic Hospital, Nov. 23, 1934, at age of 71 years, from myocarditis.

Dr. Heckard was a 33d degree mason and Past Master of VanRensselaer Lodge of Perfection which conducted his funeral service in their beautiful cathedral with a large delegation of Masons and employees of the Department of Health.

Dr. Heckard's relations with reputable members of the medical and undertakers professions were sympathetic and harmonious.

For many years the Doctor's duties included giving undertaker's examinations which were held several times annually. He could relate many anecdotes about the weird answers given to some of the questions as well as on numerous death certificates.

Indeed he had an inexhaustible fund of stories that made him the favorite raconteur on every occasion and for every kind of an audience.

Some of his favorite stories dated back to his college days in New York where he roomed in Gramercy Park and rubbed shoulders with several of the medical elite who officed in that then aristocratic former home of the Sage, Samuel J. Tilden.

In spite of Dr. Heckard's uniform urbanity, when his hobby of vital statistics was involved he spared no diligence and would tolerate none in his associates necessary in the task to complete and accurately to verify the data.

## WHAT SHALL WE EAT, WHAT SHALL WE DRINK AND WHEREWITHAL SHALL WE BE CLOTHED?

Peter T. Swanish, in speaking of the status of medicine under the New Deal (Illinois Medical Journal, June, 1934) makes the following pertinent comment. We quote:

"In the first place, relatively less income is spent for medical services because in a civilization of things such as ours, the style of life is cut out of the countless contraptions without which few men would be happy. We are in a sense drowned in a bewildering complex of possessions which modern industry offers as an answer to the simple question: what shall we eat, what shall we drink and wherewithal shall we be clothed? The acquisition and the use of the means to this end, whether for good or bad, engrosses us in such unswerving concentration that life for the most part becomes a nervous scramble for things. This set of external factors determines the pattern of our social scale of consumption and the character of the economic system. The result is that things as such push medical service to and beyond the margin which separates economic from free goods. A distorted sense of values produces an irrational scale of consumption in which medical service competes with trifles and trinkets at the margin.

"At a time when incomes are falling, individuals who under normal circumstances consult the private practitioner turn to institutions supplying the needed services gratuitously. Once peo-

ple 'reap where they have not sown,' they are certain to return, and having browsed in the verdant pastures of free service, are likely to come back after the original cause has long disappeared. The product of this is that sooner or later gratuitous service comes to be regarded in the nature of a right. Custom follows from the facts of experience that give rise to it. In the long run this distorted sense of right germinates and blossoms out into institutions supplying free services. The practice is first rationalized, then institutionalized.

"By this process the shift in the demand for service from the private practitioner to the free clinic becomes permanent. Whatever value the rules and regulations of the FERA may have, they do suggest the more or less permanent institutionalization of fees over a wide area of medical practice. Once you accept the premise that a dollar in the pocket is worth two on the books, you may ultimately have to reconcile yourselves to a dollar on the books that never reaches the pocket.

## GOVERNMENT MEDICINE FROM THE VIEWPOINT OF A LAYMAN

Catharine Stoddard, Grosse Point Park, Michigan, in the November 17, 1934, issue of the *Literary Digest,* says:

GOVERNMENT MEDICINE

*To the Editor of The Literary Digest*—Sir:—The idea of government medicine as advanced by Dr. H. B. Wentz of Arkansas in the October 27 issue, may appeal to people who like to think of the Federal Government as the Great White Godfather who will miraculously keep on furnishing poor folks with the benefits they are unable to buy. As a matter of fact, nothing is ever "free." If the Government assumes control of medicine, that heir of misery, the taxpayer, will find himself paying his own and his indigent neighbor's medical costs, besides the salaries of a large organization necessary to supervise a national medical service.

Graft and waste are inseparable from government enterprises, therefore socialized medicine would eventually cost the average man and woman more than the present system of private practice. Besides this, they would be restricted in their choice of a physician and subjected to factory methods of treatment. Dr. Wentz mentions certain districts which are too poor to support a private practitioner. The State or Federal governments could pay doctors to serve the people in these districts, at an infinitesimal fraction of what it would cost to set up a nationwide organization.

## RELIEF PATIENTS SHOULD BE HOSPITALIZED IN ANY HOSPITAL SO DESIRING AND MEETING REQUIRED STANDARDS

A RESOLUTION

WHEREAS, The Illinois Emergency Relief Commission has made it possible for relief patients to be hospitalized for a stipulated payment per day to the hospital, and

WHEREAS, The Council of Social Agencies has been given the right to dispense the Illinois Emergency Relief funds for this purpose, and

WHEREAS, The Council of Social Agencies has permitted only fourteen of the hospitals in Chicago to admit these relief patients, and

WHEREAS, The doctors find an increasing number of their patients on relief, and

WHEREAS, The present arrangement of hospital relief does, in the majority of cases, remove them from the care of their family physician, and

WHEREAS, It is not the intention of the government to interfere with or disturb the relation of the patient to his family physician,

*Therefore, be it Resolved,* That the North Shore Branch of the Chicago Medical Society petition the Chicago Medical Society and the Chicago Hospital Association to exert their influence to bring about an adjustment of the present arrangement, whereby relief patients may be hospitalized in any hospital so desiring and meeting the required standards of rules and regulations of the Council of Social Agencies, and may be treated therein by their family physician.

## PANTRY THEOLOGY

Most bishops hold their butlers in awe, and even this one was taken aback when upon informing his butler that he expected about thirty clergy to luncheon the next day, he was asked the startling question, "Be they 'igh church or low, my Lord?" "What difference does that make?" asked the amazed bishop. "Well it's like this, my Lord. If they be 'igh church, they drinks a lot, and if they be low, they eats a lot, so I likes to know what to provide."—*The Saturday Review* (*London*).

## MEDICAL ECONOMICS

From various reliable sources the information that many phases of the New Deal have been awaiting the results of the most recent election, has been received. With all the talk of old age pensions, job insurance, health insurance, it is difficult to imagine that the medical profession is to be spared. Already there has been formed The Committee on Economic Security, with a non-medical Doctor as its chairman. This committee, appointed by the Department of Labor, is to study the entire question and to report back to the department head prior to the opening of Congress in January, with recommendations as to legislation to correct the present conditions.

It has always seemed a little far fetched to insist that there is a need for a great change in the method of care of the sick. Statistics prove that the death rate is about the same all over the country. There has never been a request for help by the medical men and surely the past four years enough of them have been in financial difficulties to have perceived and possibly welcome any change that would have helped themselves as well as the sick. I have heard of few complaints from the sick themselves. In fact the free choice of physicians is one of the redeeming features of the present plan of the Emergency Relief Work. If the demand is neither from the medical profession or the patients, it must come from the outside, which in this case means the reformers, social workers and politicians. It is not for us to question their integrity or honesty, but we can their judgement.

The past four years have shown very conclusively, how effectively an organized group may effect the people of this country. The news appearing daily in the papers shows that the medical profession is now to receive their attention. So far they have shown no tendency to get the opinion of organized medicine on the subject and have even given the impression of studiously avoiding organized medicine. That in itself should be enough to arouse the Doctors of this state and country from their lethargy and private disagreements, and unite them as they have never been united before to be ready to combat with information, influence and votes, if necessary, the entire question of State Medicine.

For the last year this Committee has been mentioning the spectre of State Medicine, until they are almost ashamed to again bring up the subject. But like Banquo's ghost it will not stay down and in the opnion of this committee it is the livest now it has ever been. It is up to the best minds of the profession to get busy on this subject. We must be able to defend our present manner of practicing medicine and caring for the sick. We must make a careful appraisal of conditions and if changes are necessary be ready and prepared to meet them by a definite plan. Having decided on this plan it is then our duty individually and collectively to get out and use all our influence with the laity as well as the legislators to see that Revolutionary changes are not made.

All of this may seem strong talk, but this will be considered quite mild compared with what is likely to be said and written in the next few months, if we do not prepare to meet the threat. In this fight there will be work for all. The A. M. A. will be and is ready. The State Societies of many of the states are already on the job and you can rest assured that the Illinois State Medical Society has the question under serious consideration. Each of us can help by explaining to the laity what is proposed, and getting their assistance in bringing to the legislators the fact that such a change is not desired by the laity. We can write and talk to the members of Congress, and if the entire 150,000 physicians in this country use one half of the energy and influence they waste on other things, for the next three months, we can be a powerful influence, whether we are supposed to be or not.

I feel sure that either the Editor, the President or the Secretary of Illinois State Medical Society will have a message on this subject in this or the next issue of the Journal. Read them when they come out and stand ready to do your share in this, the greatest problem in Medical Economics, organized medicine has ever encountered.

E. S. Hamilton.
Chairman of Medical
Economics Committee.

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## CLINICAL TIPS

**You can't blame the doctor. The more he scares you the more wonderful he seems when he cures you.**

**You can tell when a man is very sick. He doesn't think it necessary to groan louder when the doctor arrives.**

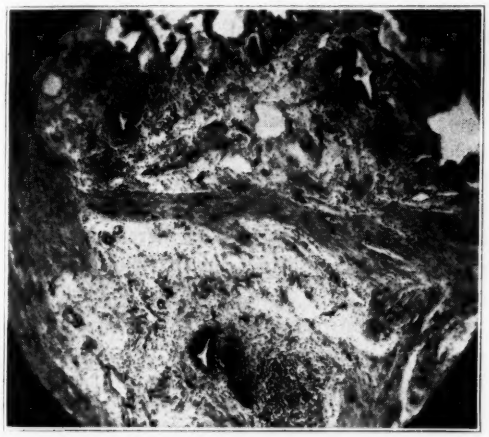
**A normal patient is one who waits five hours to call the doctor and then raves if he isn't there in 10 minutes.**
—*Fountain Inn Tribune.*

## Correspondence

### ELECTRO-SURGERY IN GALLBLADDER DISEASE

In a recent communication to the editor, Dr. B. O. Pribram writes that he described a method of destroying the "interior of the gallbladder" which he called "mucoclasis."

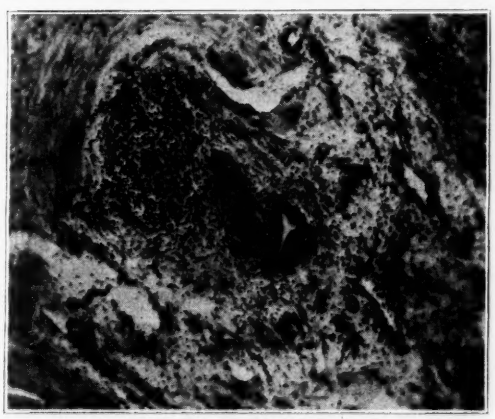
"In a great number of cases," Pribram says, "this method has proved its value especially in



*Reason for failure of mucoclasis.*
Fig. 1. Mrs. A. M. Chronic cholecystitis eight months after mucoclasis (electrocarbonization) of the mucosa. Note remnants of Rokitansky-Aschoff sinuses and diffuse round cell infiltration. Below in center of field an aggregation of polymorphonuclear leucocytes. Persistence of symptoms. Relieved by total obliteration of gallbladder wall by electrocoagulation. Reduced from a photomicrograph with a magnification of 105 diameters.

the case of shrunken and scarred bladders which can hardly be resected without causing serious bleeding wounds in the liver bed. . . .

"In November 1933," he continues, "Thorek described in this journal a further development of this method with more radicality under the name of 'Cholecystelectrocoagulectomy'. Thorek's idea is based upon the fact, that in the case of an infected bladder, germs can be found not only in the mucous and submucous tissues of the gallbladder, but nearly regularly in its deeper parts, especially in the Rokitansky-Aschoff sinuses. For this reason he (Thorek) extended electrocoagulation of the mucous membrane or the submucous parts of the wall to a total destroying of the gallbladder. . . . Thorek aims, if I understood him rightly, to destroy all the infected parts, the residual infection being one of the main causes of recurrent troubles after operation. . . . For this reason Thorek insists upon the total electrocoagulation of the gallbladder and its bed for the purpose of destroying deep seated foci of infection. . . . Thorek's conclusions seem to be logical but the reason why I was not so radical and why I recommended in my first paper only the destroying of the 'internal walls' was the following: the infection is not limited to the wall of the gallbladder. We find in a great percentage of cases also, the liver itself to contain germs in large quantities and not only in the very neighborhood of the gallbladder. We cannot, therefore, succeed in any way by electrosurgical means in destroying all infected spots even when we electrocoagulate the whole gallbladder and the liver bed. . . . According to my experience electrocoagulation is in the same way the best method of treating abscesses of the liver of any kind. . . . I do not close regularly the abdominal wall in all these cases but introduce according to circumstances, a simple rubber drain. . . . Therefore I no longer destroy or resect bladders with a simple inflammation of the mucous membrane, but perform in order to conserve the function and favor a self-healing of the inflammation a wide anastomosis between



*Reason for failure of mucoclasis.*
Fig. 2. Same case. Observe collection of leucocytes about Rokitansky-Aschoff sinuses (Magnification 215x).

the bladder and the common duct a cholecystocholedochostomy."

Pribram's communication was submitted to Dr. Max Thorek whose reply follows:

*"Pribram's operation and his results are entirely different from mine. Obviously he mis-*

*interprets the difference between cauterization and electrocoagulation—two entirely different processes, in physical properties, mode of production and effects on the tissues.* . . . In previous communications I pointed out that surgeons preceding Pribram practiced extensive partial cauterization of the mucous membrane of the gallbladder with the Paquelin burner for purposes of avoiding fistulas. Pribram extended such

*Reason for failure of mucoclasis.*
Fig. 3. Mrs. M. L. Chronic cholecystitis nine months after electrocarbonization of mucous membrane of gallbladder (mucoclasis). No relief of symptoms. Regeneration of mucous membrane and persistence of inflammation (round cell infiltration, and the like). Relieved by electrocoagulution of entire gallbladder wall. Reduced from a photomicrograph with a magnification of 220 diameters.

'charring' or 'burning' as he refers it, to larger areas of the gallbladder mucosa and called this procedure mucoclasis. As recently as 1933 he still speaks of 'carbonization of the mucosa of the gallbladder.'

"I have shown elsewhere that such cauterization of the mucous membrane of the gallbladder is insufficient to eradicate diseases of the gallbladder. The charred eschar resulting from the destruction of the mucous membrane of the gallbladder, acts, as do all eschars resulting from burns, as an impervious loosely attached foreign substance carrying with it the potential danger of partial or total detachment, which may result in hemorrhage, thrombosis and possible embolism. Albertin points out that Pribram lost nine patients in a series of 310 cases in which mucoclasis was employed. Coupled with this drawback there is still another, more important, factor, which is that the incomplete destruction of the gallbladder wall by carbonization defeats its purpose by permitting micro-organisms to remain dormant in the Rokitansky-Aschoff sinuses. Carbonization is a superficial process. Electrocoagulation, on the contrary, permits destruction of tissue to any depth desired, simultaneously sealing lymphatics, blood vessels and biliary canaliculi. It leaves a dry, sterile, impervious surface tending to agglutination with serous surfaces.

"Pribram never offered any microscopic evidence as to what transpires after his 'burning' of the gallbladder mucosa (mucoclasis). In a series of cases operated on by me, adhering strictly to his technic, I met with invariable failures. The reasons for these failures were disclosed by my reported histologic studies (Illinois Medical Journal, 1933; Journal of the American Medical Association, 1934). The illustrations here submitted (Figs. 1 to 4 incl.) tell the story of what happens to gallbladders treated *a la Pribram* and why there is, as in my series of cases a continuation of symptoms. Reoperation of these cases by my method (destruction of the entire posterior gallbladder wall and its bed by electrocoagulation with superimposition of the falciform ligament) brought complete

*Cholecyst electrocoagulectomy*
Fig. 4. Complete electrocoagulation of the entire gallbladder wall extending into the gallbladder bed. Contrast this section with the foregoing. Here a hyalin like network of coagulated (inert) tissue leaving no infectious processes behind results, which acts as a sterile tampon against the gallbladder bed.

relief. No drains were used in any of these cases (to date, 88 in all). There were no fatalities in this series.

"Pribram's argument, that because the liver harbors micro-organisms, surgical attack of the gallbladder seems to him futile. Shall we not remove an affected appendix because the large bowel is teeming with micro-organisms? Shall one stand by idly and not attack a focus in the

lung because tubercle bacilli are ubiquitous? Shall a definite focus of infection, no matter where, be left alone because other infections exist? Oh shades of Billings et al!

"Again, Pribram's latest teaching to leave inflamed gallbladders alone and perform even 'in simple cases' an anastomosis between the gallbladder and the common bile duct, will not appeal, I venture to opine, to the majority of practical conservative American surgeons. First, because such an anastomosis is difficult to perform, even in the hands of the expert, second, it leaves infected tissues behind. Besides, practical surgeons prefer to choose methods supported by facts instead of abstract theories.

"It is significant that Pribram recently abandoned his glowing enthusiasm about 'burning of the mucous membrane, substituting for it, unfortunately, a more dangerous and even less efficacious and surely more complicated method —cholecysto-choledochostomy.

"I am pleased that Dr. Pribram concedes that my 'conclusions are logical.' May I add, they were drawn not from hypotheses but from work in the laboratory, coupled with clinical observations."

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## AN EXAMPLE OF ANTIVIVISECTION SOCIETY ACTIVITIES

To All Members: Reports from Hollywood say that Universal Pictures is to make a motion picture called "Life Returns" based on the experiments of Dr. Robert E. Cornish of California in which he restored a supposedly dead dog to life. The story says that Cornish will appear in the picture and that the actual experiment on the dog will be shown. We MUST stop this picture. Please write a strong letter to—CARL LAEMMLE, President, Universal Pictures, Rockefeller Center, New York, protesting the attempt to commercialize such a morbid theme. Say that the picture would give lasting offense to humanitarians; would antagonize not only human workers but many religious sects as well, and that it would have a bad influence on youth. We killed the attempt to glorify Pasteur. Let us kill this outrageous picture also.

THE NATIONAL ANTIVIVISECTION SOCIETY.

37 So. Wabash Ave., Chicago, Ill.

## LOCATION FOR A PHYSICIAN IN ILLINOIS

Maeystown, Illinois.
October 4, 1934.

*To the Editor:* Our town of 500 population 35 miles south of St. Louis, Mo., 10 miles from Waterloo, Ill., is in need of a medical doctor—only doctor in town—nearest doctor 10 miles. Roads above average. Stand strict investigation for a doctor who wants country practice. Farming community.

Former doctor used $150-$200 per 60 days in drugs. Bought from Blue Line Chemical Co., St. Louis, Mo. If you have a man in your community or know of one, this will be a good location and a money maker for proper person. You can refer to Blue Line and see what former doctor did.

If you have someone who may be interested kindly get in touch with him as we are anxious to have one come here. Former doctor left two-three weeks ago. Hoping to hear from you, address

Geo. P. Jobb,
Maeystown, Ill.

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## CINCHOPHEN AND AMIDOPYRINE DANGEROUS TO HEALTH AND LIFE, SAYS FOOD AND DRUG CHIEF

*To the Editor:* Widespread use of two dangerous drugs—one which destroys the liver and the other which kills the white corpuscles of the blood—brought a warning today from the Federal Food and Drug Administration. These drugs are cinchophen and amidopyrine. Cinchophen, a chemical anodyne and sedative, is sometimes used by sufferers from neuralgia, rheumatic pains, neuritis and similar conditions. Amidopyrine is frequently found in headache remedies and other pain killers.

"Current medical literature contains many reports which clearly indicate that these drugs are dangerous to health and life," says W. G. Campbell, Chief of the Food and Drug Administration. "The gradual development of serious poisoning from the use of these drugs is often so insidious that the danger is not recognized by the user. Cinchophen causes a degeneration of the liver cells. Amidopyrine may cause a reduction in the number of white blood cells, a condition called agranulocytosis."

In issuing the warning Mr. Campbell made it

plain that he was not implying that all headache and rheumatism remedies contained these dangerous drugs. But the fact that some of them do is sufficient reason for the public to be careful. Several manufacturers declare on their labels the presence of these drugs in their medicines, but others do not. There is no provision in the Food and Drugs Act to compel manufacturers to declare either of these drugs.

The Federal Food and Drugs Act requires manufacturers to declare upon the labels of their products the presence of several narcotic drugs. When the law was passed cinchophen was unknown and the dangerous effects of amidopyrine had not been recognized. For these reasons these drugs were not included in the list.

Under present conditions buyers should observe two precautions, says Campbell. First, read the label and look for statements of the presence of these drugs. If they are not declared and there is any doubt, ask the druggist or write to the Food and Drug Administration in Washington and ask for the facts.

## MERCK & COMPANY ESTABLISH RESEARCH FELLOWSHIPS

George W. Merck, President of Merck & Co., Inc., manufacturing chemists, Rahway, N. J., announces that the following list of research fellowships has been established in colleges and universities by Merck & Co., Inc.:

University of California, for the study of Pharmacology.

University of Pennsylvania, for the study of Physiology.

University of Pennsylvania, for the study of sedative drugs on the horse and ox.

University of Virginia, through the National Research Council, for the study of alkaloids.

University of Pennsylvania, for the study of Bacteriology.

## AMERICAN ASSOCIATION FOR THE STUDY OF GOITER

The American Association for the Study of Goiter again offers the Van Meter Prize Award of $300 and two honorable mentions for the best essays on the subject of goiter provided they meet the standards of the award committee. The essays should be based on original research work on the subject of goiter, preferably its basic cause. The prize essay or its abridgement is to be presented at the annual meeting of the Association to be held in Salt Lake City, Utah, in June, 1935.

Competing manuscripts should be in the hands of the Corresponding Secretary, W. Blair Mosser, M. D., Kane, Pa., not later than April 1, 1935.

The first prize of $300 for the 1934 meeting was awarded to M. A. B. Brazier, Ph. D., B. Sc., London, England, for her essay, "The Impedance Angle Test for Thyrotoxicosis."

First honorable mention was awarded Prof. Ugo Cerletti, Genoa, Italy, for his essay, "Three Years of Experimental Research in the Etiology of Endemic Goitre."

Second honorable mention was awarded D. Roy McCullagh, M. D., Cleveland Clinic, Cleveland, Ohio, for his essay, "Studies in Blood Iodine Using a New Chemical Method."

## A. M. A. 1935 MEETING SCIENTIFIC EXHIBIT APPLICATION BLANKS AVAILABLE

Application blanks are now available for space in the Scientific Exhibit at the Atlantic City Session of the American Medical Association, June 10-14, 1935. The Committee on Scientific Exhibit requires that all applicants fill out the regular application form and requests that this be done as early as convenient. Applications close February 25, 1935.

Persons desiring application blanks should address a request to the Director, Scientific Exhibit, American Medical Association, 535 North Dearborn Street, Chicago, Illinois.

## REPORT OF THE COMMITTEE ON MEDICAL ECONOMICS OF THE CHICAGO MEDICAL SOCIETY

*The following report is being published in compliance with a motion adopted by the Council at its October meeting. (Bulletin Chicago Medical Society.)*

The Committee on Medical Economics of the Chicago Medical Society, appointed by Dr. Chas. H. Phifer, for the year 1933-34, met for its first meeting in the latter part of October, 1933, at which meeting many of the problems affecting medical economics, with particular reference to this community, were discussed and at the subsequent meeting in November, a majority of the members decided that the Committee devote its major time to a study of the abuses of Clinic and Dispensary practice in Chicago. After carefully surveying this field it was decided to divide Clinics and Dispensaries into two groups; Group 1, those organized and operated for teaching purposes directly affiliated with colleges of medicine in the community, and Group 2, those which were an integral part of medical-school organizations.

In submitting this report, your Committee believes that the care of the public in matters of health, disease, and injury is, and should continue to be, under the direction of the medical profession. The relationship of the private physician to the individual patient is the most important unit in such an association. The integrity of this unit should be the basis and principle of all organized medicine. It, therefore, becomes necessary, in order to safeguard the community health, to protect the rights and interests of the private physician, as well as the public individual whom he serves. Hospitals, health centers, governmental agencies or bureaus and other similar organizations are merely accessory to the private physician, and any form of competition set up by such organized groups against the private physician is contrary or inimical to the public interests.

We would at this time also state that any extra professional plan which has for its aim the economic control of the medical profession limits and may prohibit the patient's selection of his physician and is, therefore, incompatible with the best interests of the community at large.

It has been alleged that one of the chief causes of the shrinkage in the family doctor's income is the tremendous increase in the attendance of patients at the so-called free Clinics. The actual increase has been variously estimated and the figures vary a great deal. Table I shows the marked increase in total patient visits which has occurred over a period of four years in the medical schools alone.

It has become rather commonplace for individuals to expect medical care without making remuneration for such.

There has been little objection on the part of the medical profession to treating the sick poor in the so-called free Clinics. Due to the association of these Clinics with medical schools, these patients receive most excellent supervisory care and study unless there is an excess number of patients admitted. Some of the medical schools have already inaugurated a plan which limits the number of patients in their Clinics, and invite further co-operation on the part of the medical profession to this end.

The chief complaints that have been registered against the so-called Free Clinics are not specifically against these Clinics as such, but against the advantage taken of the opportunity for such free care on the part of individuals who are able to pay for medical service. Much of such abuse can be traced to the organization of the management and the administration of these Clinics by lay personnel without adequate representation of the medical profession on their management Committees. Considerable of this neglect can be placed at the door of the medical practitioner for not assuming his share of this responsibility and those obligations which rightfully belong to the profession in the direction of these organizations. More medical men should occupy positions on the managing boards of institutions and should advise and direct these boards in the management of these Clinics.

The reasons for attendance at free Clinics are variable. It is believed that by far the largest number attend free Clinics because they have no funds with which to pay a physician. This, in part, is due to the depression, although not entirely so, since statistics collected before the depression show a definite increase in attendance in all so-called free Clinics. In attempting to arrive at the existing situation in this community with the idea of determining possible abuses in Clinic or Dispensary operation, from the standpoint of medical economics, the Committee formulated two different questionnaires which were arranged to seek out information pertinent to this problem. Certain definite information, particularly gross figures on numbers of patients and total patient visits, stand out as landmarks in these studies, and while other accumulated data has given the members of the Committee a considerable knowledge of the workings of the various Clinics, many of these facts cannot very well be transferred to this report.

## TEACHING CLINICS

There are six medical colleges in Chicago which are open for the teaching of medicine to students today. Five of these colleges operate so-called free Dispensaries. One has a definite program which involves the operation of a Clinic on a pay basis. This latter, the University of Chicago Clinics, has been studied by the Committee and is at the present time the subject of further work by a special Liaison Committee endeavoring to alter those abuses which have disturbed the medical profession most. The statistics of this latter institution have, therefore, been deleted, and only the data from the five medical colleges are included below. This data encompasses the work done in these out-patient departments in three separate years, 1929, 1932 and 1933, to bring out increases in the number of patients and patient visits, as well as variations in income received from such visits to these institutions. A great increase in both the number of new patients as well as the number of total visits is most striking and, as mentioned somewhere else in this report, is to some extent the result of the economic depression. To bring out the importance of this latter factor the Committee also obtained information and studied data on relief afforded in Cook County during the past year and also presents comparative numbers of families and persons receiving aid in different months during the past year for comparison:

| 1929 | New Patients | Total Visits | Income per Patient Visit |
|---|---|---|---|
| Illinois | 15,702 | 98,769 | 22 cents |
| Rush | 20,502 | 111,028 | 91 cents |
| Northwestern | 13,035 | 86,904 | 64 cents |
| Loyola | 5,277 | 19,593 | 44 cents |
| Chicago Medical | 2,182 | 8,869 | no data |
| **1932** | **New Patients** | **Total Visits** | **Income per Patient Visit** |
| Illinois | 14,767 | 118,539 | 22 cents |
| Rush | 26,061 | 171,228 | 39 cents |
| Northwestern | 18,742 | 129,609 | 36 cents |
| Loyola | 5,494 | 31,560 | 27 cents |
| Chicago Medical | 7,041 | 28,309 | About 40 cents |
| **1933** | **New Patients** | **Total Visits** | **Income per Patient Visit** |
| Illinois | 16,336 | 141,109 | 22 cents |
| Rush | 31,742 | 212,500 | 19 cents |
| Northwestern | 24,916 | 153,497 | 23 cents |
| Loyola | 4,691 | 31,600 | 29 cents |
| Chicago Medical | 5,463 | 26,055 | About 40 cents |

The effect of the industrial crisis on the financial status of the people of Cook County may be obtainable by reviewing the following figures which will show the approximate number of people unemployed and on relief during the past two years:

| | | |
|---|---|---|
| January, 1932 | 124,000 families | or 558,000 persons |
| March, 1932 | 134,000 families | or 603,000 persons |
| August, 1932 | 114,000 families | or 513,000 persons |
| October, 1932 | 161,000 families | or 724,000 persons |
| November, 1932 | 170,000 families | or 765,000 persons |
| December, 1932 | 180,000 families | or 810,000 persons |
| January, 1933 | 160,286 families | or 721,287 persons |
| February, 1933 | 190,000 families | or 855,000 persons |
| March, 1933 | 175,282 families | or 788,769 persons |
| April, 1933 | 171,723 families | or 772,753 persons |
| May, 1933 | 163,496 families | or 735,732 persons |
| June, 1933 | 144,825 families | or 651,712 persons |
| July, 1933 | 129,642 families | or 583,389 persons |
| August, 1933 | 116,777 families | or 525,496 persons |

| | | | |
|---|---|---|---|
| September, 1933 | 106,822 | families or | 480,699 persons |
| October, 1933 | 104,078 | families or | 468,351 persons |
| November, 1933 | 108,434 | families or | 487,953 persons |
| December, 1933 | 110,370 | families or | 496,665 persons |
| January, 1934 | 81,296 | families or | 365,832 persons |
| February, 1934 | 74,547 | families or | 335,461 persons |
| March, 1934 | 83,899 | families or | 377,545 persons |

Inasmuch as many of the people on relief constituted the overload in the clinics during the past two years, something should be said regarding the amount of money paid the indigent and unemployed in Cook County during this time.

The average amount received per month per family has been $21.66 or $5.04 per person. The $5.04 includes not only food but what payments were made for rent, clothing, medical care, etc. Free visits made to private and public clinics by the above group average one visit by one person during a month for each eight people on relief.

While there was some reduction in the number of families on relief during C. W. A. programs, the amount of money they received was so small that they were unable to pay for medical and hospital care and in the event of illness had to be transferred back to the Illinois Emergency Relief rolls for medical and hospital service. Since the closing of the C. W. A. the relief rolls are again near the peak load. The above picture should be seriously considered when one discusses the high enrollment in the clinics during the past few years.

## NON-TEACHING DISPENSARY CLINICS

There has been a definite tendency on the part of hospitals and medical men associated with hospitals and some groups of medical men outside of hospitals, to attempt to establish so-called free or moderate-fee Clinics in various communities in Cook County. May we call to the attention of the members of the Chicago Medical Society that the establishment of such Clinics is against the policy of the Society as set forth in Medical policy No. 4. "Only recognized Medical Schools Incorporated for the teaching of undergraduate and graduate physicians should conduct Dispensaries."

The following list of non-teaching Clinics, both private and Governmental, with the total number of patient visits for the past year gives one an index of the invasion of the field of practice of medicine through such organizations.

### TOTAL PATIENT VISITS (1933)

| | | |
|---|---|---|
| Board of Health, Venereal Clinic | 144,501 | |
| Chicago Lying-In Clinic | 16,693 | (1932) |
| Chicago Memorial Hospital | 1,521 | |
| Chicago Tuberculosis Institute | 10,534 | |
| Children's Memorial Hospital | 70,510 | |
| Cook County Hospital | 200,000* | |
| Evanston Hospital | 18,409 | |
| Illinois Eye and Ear Infirmary | 69,733 | |
| Illinois Masonic Hospital | 8,490 | |
| Illinois Social Hygiene League | 99,244 | (1932) |
| Lakeside Clinic and Postgraduate | 647 | |
| Michael Reese, Mandel Clinic | 144,722 | |
| Mt. Sinai Hospital | 41,704 | |
| Municipal Tuberculosis Sanitorium Dispensaries | 298,456 | |
| Policlinic Dispensary | 26,933 | |
| Provident Hospital Dispensary | 47,254 | (1932) |
| St. Elizabeth's Hospital | 5,994 | |
| St. Joseph's Hospital | 6,530 | |
| St. Luke's Hospital | 62,118 | |
| West Side Post Graduate | 15,157 | |
| Women and Children's Hospital | 10,047 | |
| Lewis Memorial Maternity Hospital | No report available | |

Taking both the teaching and non-teaching Clinics, one finds the staggering total of 1,863,967 patient visits in one year in Cook County, most of which is the result of free service given by the physicians. Little does the public know or realize the great contribution that the medical practitioner is making to the community in this work. Are all these visits the result of indigency?

It should be expected that with the rapid growth of the metropolitan area there should also be a gradual increase in the number of indigent patients in the community. The increase in indigency brought forth the social worker in an attempt to correct the evils existing and while the social worker has added to the solution of the problems, a closer cooperation is needed between the social agencies, the social worker, and the medical profession providing such care, and that in this closer cooperation a basis for the ability of the patients to pay a medical fee should be one of the points for determination.

Appreciating that cooperative effort accomplishes much more than controversial thoughts and statements, the Committee has arranged a meeting with the Chiefs of the various Dispensary Clinics in the City of Chicago, at which time the different problems which have appeared will be discussed and an attempt made at their solution.

## RECOMMENDATIONS

In order to correct the abuses of the so-called free Dispensary Clinic, the Committee presents for your study, approval and action the following recommendations:

1. Realizing, as stated above, that there is an inadequacy of investigative effort from the viewpoint of the economics of the practitioner of medicine, your Committee feels that a competent Supervisor of Social Service be employed by the Chicago Medical Society, to develop those standards embodied in what we might term is the medical viewpoint, and proceed to organize a group of approximately six associated who would function in a supervisory capacity in various Clinics in different parts of the city, to present this viewpoint to the larger group of social service workers now operating in this field.

2. Your Committee would also make a definite recommendation in carrying out one of the provisions of proper social service function with a uniform simplified questionnaire concerned with every possible phase of family income be adopted and most diligently answered in every instance by the patient when he seeks care.

3. Your Committee feels that there is considerable duplication of effort and waste of funds as a result of migratory patients transferring their affiliations from one Clinic to another and recommends that a bureau of registration, called a clearing house, be established and a simple means of registry be employed for every patient presenting himself to a Clinic for care. All of the

Clinics operating in the community would utilize this service, would be given duplicate registration slips for their files and limit these migratory tendencies and thus limit unnecessary duplication of physical examination, laboratory examinations, registrations, etc.

4. Your Committee has taken notice of campaigns of education which have been started by certain pharmaceutical houses, namely, Parke Davis, Meade Johnson, and E. R. Squibb, and the Metropolitan Life Insurance Company, in carrying a message to the public concerning the important part the family doctor plays in bringing health to humankind.

5. During the winter this Committee arranged liaison with a committee from the Chicago Hospital Association and with a representative of the Council of Social Agencies to improve conditions as they affect the patient, the doctor and the hospital. We, therefore, recommend this liaison be continued.

## REPORT ON THE ST. LOUIS PLAN

At a previous meeting the Council requested this Committee to study the so-called St. Louis Plan and to report the results of this study to you. The Committee has gone over the material submitted in great detail and wishes to report as follows:

The material submitted consisted of a brown covered booklet called "Code and Contract Board of the St. Louis Medical Society" and a mimeographed copy entitled "Proposed Declaration of Agreement Between the Code and Contract Board of the St. Louis Medical Society and the Hospitals."

1. *Proposed Declaration of Agreement Between the Code and Contract Board of the St. Louis Medical Society and the Hospitals*

The contents of this proposed declaration were considered seriatim and will be presented to you in this form:

1. All internes shall be encouraged and urged to apply for junior membership in the St. Louis Medical Society.

2. All staff members shall be urged to join the St. Louis Medical Society.

3. All doctors of medicine practicing within the hospital shall be urged to become members of the St. Louis Medical Society.

It is not necessary at this time to call your attention to the fact that this program has been in vogue in the Chicago Medical Society for many years.

4. Paragraph 4 deals with the classification of patients with particular reference to so-called indigent patients. They make the following classification regarding indigent patients who apply to a clinic:

(a) Indigents referred by social agencies for whose medical care all agencies are directly or indirectly responsible.

(b) Transient indigents who have no local physician and who cannot be taken care of by city institutions on account of legal restrictions.

(c) Indigents who are local residents who apply directly and immediately to out-patient departments.

(d) Or indigents who are referred to the out-patient departments at their own request or on the advice of the physician.

After this classification has been set up, certain policies have been advised that shall be enforced.

(a) The St. Louis Medical Society agrees concerning class "a" above that the out-patient departments shall give free medical service including physician service subject to such restrictions as are common in well regulated social agencies, a statement of those policies to be submitted by each social agency to the St. Louis Medical Society for criticism and approval;

(b) For the purpose of safeguarding the medical care of indigent transients, the St. Louis Medical Society agrees that out-patient departments may give free medical attention after the real indigency of the transient has been determined by a thorough investigation.

(c) Concerning class "c," the out-patient departments will agree in each case to make an investigation upon the following points:

1. Whether or not the applicant for free medical attention has or has had within the last six months a private or a family physician.
2. The reasons why the applicant does not return to this private or family physician in his present need.
3. The willingness or unwillingness of such a physician to continue the treatment of such a patient. In case the physician is willing to treat the patient, the out-patient departments will refuse such attention. If, however, the physician is willing to release the patient to the out-patient department he will signify this in writing or in some other manner acceptable to the St. Louis Medical Society.

(d) Regarding class "d," the out-patient departments agree to receive patients referred to them by physicians for free medical attention subject, however, to an adequate social investigation. The physician will, however, state in his blank or letter that he is not charging the patient.

(5) A further study of this report shows that the St. Louis Medical Society has asked hospitals and social agencies to submit to the St. Louis Medical Society a statement of their admission policy.

(6) Hospitals, teaching institutions, dispensaries and clinics are asked to co-operate with the St. Louis Medical Society in the correction of any form of the abuse of medical charity.

(7) Information ethically regarded as privileged should not be given to any corporation or individual other than the patient without the knowledge or consent of the physician.

(8) Hospitals are asked not to allow an interne or house officer, except in emergencies, to give professional service to a patient paying any fee whatsoever unless the patient is assigned to a doctor of the patient's choice.

(9) Whenever a patient has been treated in a dispensary or a hospital under false presumption of indigency and it is later found out that the patient was able to pay for it at the time the free service was given, they believe the patient should be charged both by the hospital and the physician for the service rendered.

(10) The hospitals are asked to cooperate with the St. Louis Medical Society on these various points.

When patients make application for free medical service they are requested to fill out an application blank and an affidavit. The questionnaire contains the following eight questions:

1. Do you now own any real property?.....
   If so, where is it located?.....
2. Do you now rent the property in which you live?
   If so, to whom do you pay rent?.....
3. Are you, or any member of your family, now employed? .....
   If so, by whom?.....What wage or salary?.....
4. Have you any income from rents, stocks or bonds?
   If so, amount of income.....
5. Have you a bank account?.....
   If so, what bank?.....
6. State in full your present financial condition, and give full statement of your present income, if any:
   .....
   .....
7. Number of persons depending upon you for support? .....
8. Relationship of dependents.....

2. *Code and Contract Board of the St. Louis Medical Society*

The booklet entitled "Code and Contract Board" deals chiefly or more specifically not with the abuse of medical charity but with the question of contracts or agreements either verbal or written.

Contracts or agreements, verbal, written or implied, shall be grounds for trial on charges of unethical conduct before the Censors Committee if the contract involves:

1. Solicitation of patients, directly or indirectly.
2. Underbidding to assure contracts.
3. Compensation inadequate to assure good medical service.
4. Interference with reasonable competition.
5. Prevention of free choice of physician.
6. Conditions inadequate for proper service to patients.
7. Any provisions or practical results contrary to sound public policy.

This Board has power to prefer charges of unethical conduct against members when these various principles have been violated.

Members are restricted from making contracts on any terms other than the terms authorized by this Code and Contract Board.

One very interesting thing is a recommendation of this Committee that the members of this Society present their accounts for professional services at the close of the attendance and it shall be the duty of each member to obtain, if possible, a monthly settlement from all his patients. They evidently believe in having the doctor increase his business efficiency.

At the end of this Booklet is a Fee Table that is an interesting one.

## CONCLUSIONS

1. Many of the articles contained in the above St. Louis Plan have been in practice in the Chicago Medical Society for many years; namely, Interne Committee, Membership Committee, Contract Practice Committee.

2. Those articles which refer to hospital cooperation, indigency and contracts have occupied much of the time of your Committee on Medical Economics prior to their study of the St. Louis Plan.

3. Your Committee, realizing the importance of such matters, have built up a liaison with the hospitals of Chicago through the Chicago Hospital Association, and, in an endeavor to control more carefully the problem of indigency, are working on a plan with the Council of Social Agencies that should prove helpful in this latter matter.

COMMITTEE ON MEDICAL ECONOMICS.

## WOMAN'S AUXILIARY TO THE ILLINOIS STATE MEDICAL SOCIETY

A meeting of the Board of Directors of the Woman's Auxiliary to the Illinois State Medical Society was held Saturday, October 20, 1934, at the Woman's University Club, Chicago, the president, Mrs. Lucius Cole, presiding. In addition to routine business, the organization chairman, Mrs. Middleton of Pontiac, reported the organization of McHenry, Lee and Fulton County branches, also the Calumet branch in Cook County.

Dr. R. R. Ferguson, chairman of the advisory committee, gave a brief talk on "Auxiliary Policies." He commented on the value of the Auxiliary contacts with the outside, advised us to keep ourselves informed by reading the medical journals, commenting particularly on Dr. Whalen's article in the June issue of the JOURNAL on "The Perils and Pitfalls of Medicine" and also to his article in the October JOURNAL on "False Medical Statistics." He urged an active interest on our part in politics in order to secure the passing of necessary legislation and to counteract any detrimental legislation. He urged us to secure the help of other organizations.

The president emphasized that one of our main objects this year is to combat literature detrimental to the profession.

MRS. LESLIE B. JOSLYN,
Chairman Press and Publicity.

## WOMAN'S AUXILIARY TO THE CHICAGO MEDICAL SOCIETY

One great bond we have in common, one ideal that we hold highest among our earthly ones—the bond, that of participating in the practice of the noblest of professions; the ideal, that of using our services widely in the interest of that profession and mankind, and proving ourselves true helpmates, both individually and collectively. Collectively, we are a strong force that may be of some use in a quiet way, to the medical profession. We, who know the unselfishness of these men of ours, can do much to enlighten a frequently misinformed public about the true character of medical work and its plans for public health and welfare. We can, in a non-aggressive way, offset much of the wicked propaganda constantly kept before an ignorant and deluded populace.

With this in mind, let us use our time wisely, make

our plans carefully, and thank God for the opportunity to be of service to this profession of which we are an honored part.

MRS. ROBERT W. TOMLINSON,
President of the National Auxiliary.

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REMARKS BY THE PRESIDENT OF THE WOMAN'S AUXILIARY OF THE CHICAGO MEDICAL SOCIETY

The following excerpts are from the President's news letter, *November, 1934:*

For some time there has been a desire within the Central Auxiliary Council to find a means of letting every individual member of the Auxiliary know what is being accomplished. Knowing there will always be members who cannot attend meetings but who are nevertheless vitally interested and whose interest we wish to hold, the Council this fall decided that *News Letters* should go out at intervals in an endeavor to keep the entire Auxiliary body informed.

Self-education may be accomplished through lectures given at the Central organization or to your own group; through reading and studying all Auxiliary letters published in the National, State and County Journals and by reading in the *Bulletin* of the Chicago Medical Society of those problems which the Society is facing.

This year your Legislative Committee reports that the American Medical Association is working in conjunction with the American Bar Association toward making uniform State laws, a model Lien Law, model Narcotic Act, Basic Science Law, Law for the Sterilization of the Socially Inadequate, a bill to curtail the use of hypnotics such as the Barbitals and so on. In the local field legislative problems are causing much concern. The anti-vivisectionists, with a recent gift of one million dollars, are bending every effort to pass laws which will ring the death knell to scientific progress in medicine, or even what is worse, to the continuance of the production or development of those products which have freed us of scourges and epidemics. We are practically without funds. Our only hope lies in the faith we hold that in serving the greatest good to humanity we bring the greatest good to all living creatures. Study, if you are not already familiar with the facts, the long list of conquered or controlled diseases most, or all, of which were at some period of their development, dependant upon animal research. Note, too, that they serve the animal kingdom in its entirety, both the higher and the lower.

Watch for the lecture on legislative problems and if you want the facts on vivisection ask your Program Chairman to send them to you. We shall need your help in this and on many other problems this year, so stand by for our calls.

I want to impress upon you that your chairman will be only as effective as her group. Each of you must feel the responsibilities, which are but supervised by your chairmen, and co-operate wholeheartedly.

Your Public Relations Committee supervises perhaps the most vital function of the Auxiliary. It is through this department that a better understanding must be developed between the profession and the public. To quote from a National Auxiliary "News Letter:" "A well-schooled Woman's Auxiliary group reaches out into every phase of woman's organization work. The doctor's wife takes a part and generally a prominent part in Public Welfare work, Parent-Teacher Association work and Federated Charities activities.

We ask, and we wish you to consider it a duty, that each member furnish the name and address of the Program Chairman of any and all organizations to which you belong.

We desire that you watch all lay magazines for articles and radio broadcasts for programs which are in any way a deterrent to public health or welfare and report these things to your Public Relations Chairman.

You must keep an ear open at all club meetings and be so informed and interested that should cultists, charlatans or pseudo health information be sought you can and will speak up and direct the interest into channels of truth.

Your Program and Education Committee is your stimulator of interest—your means of gaining and disseminating knowledge. We are especially favored in Illinois; your chairman has but to go to the office of the Illinois State Medical Society and ask Miss Jean McArthur and there are ready for your needs innumerable Study Envelopes from which to make a selection, or a speaker may be secured there. If some special subject is favored by an individual or Branch and your group is too small to ask a lecturer to devote his time to it—have your Councilor ask the Central Organization to have such a lecture subject during the year.

Your Hygeia Committee is a means of Self and Lay Education. Material furnished in the *Clip Sheet* should be read and discussed at each meeting. The reading of *Hygeia* and the spreading of its messages over an ever-widening circle of libraries, schools, homes, reading rooms and wherever the Christian Science Monitor is found—will gradually enlighten ourselves and a vast public of reasoning minds.

Be sure every step is approved before you take it—and do not lay aside a labor until you are sure it is as nearly completed as you can do it.

Right now we are bending every effort to encourage public attendance at the Laity Meetings of the Chicago Medical Society, as per our recent letter. Keep them in mind. Write on your calendar: November 14, Germs; December 5, Cancer; January 9, Overweight, and *tell everybody.*

Go to meetings of those who hold an opposite opinion to ours. *Know* what we are trying to combat.

Year by year we are proving our value and as steadily we are receiving more and more calls to do our part toward influencing public opinion and educating the laity on health problems.

This year's annual Auxiliary bridge party will be held at the Bal Tabarin of the Sherman Hotel, with buffet luncheon, table and door prizes. Tickets $1.00. *See how many outsiders you can interest.* Come and bring others.

I doubt if I shall ever write so long a *News Letter* again, but the foundation seemed necessary for those who belong but have not yet become a part of us. From now on it is our plan merely to keep you aware of things as they transpire and progressively to build up

an interest until it becomes an enthusiasm for The Woman's Auxiliary to the Chicago Medical Society.

MAUDE H. WOLFER, President.

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## EDUCATIONAL COMMITTEE

*November Activities*

SPEAKERS BUREAU:

40—Doctors gave popular health talks before lay groups. Parent Teacher Associations, Women's Clubs, High School Principals, College Presidents, Ministers, Y. M. C. A. Secretaries, Rotary and Kiwanis Clubs, and Home Bureaus made use of this service.

Contrary to the opinion of some, physicians are well qualified to give these popular lectures and that they do so is indicated by the comments received on the forty programs arranged during the month:

"Many very favorable comments from those present. He gave a practical and interesting talk."

"Dr. H. has his material well in hand and presents it in an effective and interesting manner."

"Very good talk."

"Splendid talk. Everyone very interested. Have heard many speak about the lecture."

"Very valuable talk."

"His talk was to the point and just what we wished. It brought results and an assembly talk before high school students is being arranged."

SCIENTIFIC SERVICE:

19—Speakers were scheduled for scientific meetings of county medical societies. This service is offered to all county societies and is being used every month by some secretaries.

RADIO:

22—Ten minute health talks were given from Chicago radio stations. Although no announcement is made that copies of talks are available, a good many requests came in for papers that were read during November.

PRESS REPORT:

336—Articles to newspapers using regular service.

20—Articles to newspapers using monthly service.

180—Press articles to Chicago libraries for bulletin boards.

256—Press articles to Downstate libraries for bulletin boards.

4—Press articles to Red Cross Headquarters in Chicago.

4—Press articles to Central Branch Y. W. C. A. in Chicago.

39—Releases to papers about 8th Councilor District meeting.

63—Releases to papers about Princeton Medical Meeting.

4—Releases to papers about Calumet Branch meeting.

8—Releases to papers about Englewood and Stockyards Branch.

4—Releases to papers about North Shore Branch Meeting.

71—Releases to papers about 9th and 10th Councilor District Pediatrics Meeting.

57—Releases to papers about LaSalle County Medical Meeting.

56—Releases to papers about Chicago Medical Society Meetings.

Press articles were written and approved on the following subjects:

Are Glasses Actually Necessary?
The Don'ts of a Reducing Diet.
The Skin in Cold Weather.
Importance of Play.

SPECIAL SERVICE TO COUNTY MEDICAL SOCIETIES:

76—Postal card notices to doctors of Lawrence, Richland, Jasper, Clark and Crawford counties about medical meeting at Robinson.

260—Notices mimeographed for the Woman's Auxiliary.

295—Notices for LaSalle County Medical Meeting.

448—Postal card notices for 9th and 10th Councilor Pediatrics Meeting at DuQuoin.

260—Postal card notices re Medical Economics Meeting at Pontiac.

250—Sheets of mimeographing for Illinois State Woman's Auxiliary.

Special publicity given popular meetings sponsored by the Chicago Medical Society:

120—Letters and announcements to Cook County ministers.

83—Letters to doctors, enclosing ten announcement cards.

47—Libraries furnished announcements for posting.

80—Hospitals furnished with the announcement.

24—Notices sent to Chicago industries.

891—Announcement cards sent to Women's Clubs and Parent Teacher Associations.

22—Notices to Y. M. C. A.'s, Y. W. C. A.'s, and organizations.

45—Notices to clubs.

250—Cards to the Woman's Auxiliary.

The Educational Committee has endeavored to give its service wherever organized medicine might be needed. Radio time has been given for promoting proper education of the facts concerning vivisection, material is being collected which will be of value to the doctor or layman studying the question of health insurance.

Many requests are coming from all over the state for materials and when the Committee is unable to supply what is needed, the American Medical Association library gives valuable help.

A Medical Officer of one district of the American Legion is planning to have brief talks on timely medical subjects given at the monthly meetings of the various Posts. The Educational Committee office is supplying the material to the men who will give these talks.

Respectfully submitted,
JEAN McARTHUR, Secretary.

## Original Articles

# DIAGNOSIS AND TREATMENT OF INFECTION OF THE UROGENITAL TRACT IN CHILDHOOD

ISAAC A. ABT, M. D.
CHICAGO

This subject of urinary infections was assigned to me by the program committee. I am sure that everyone here is well informed about urinary infections in childhood and is well acquainted with the extensive literature on the subject. Consequently, I shall try to be brief and recall to you a few episodes concerning this subject, which I have collected in the course of the years.

We must not think that urinary infection in childhood is a new subject. Rayer, in 1837, described pyelitis in an early publication. It was fully discussed as far back as 1844 in the first edition of the text-book of Barthez and Rilliet.

It will be recalled, too, that these authors were impressed by the writings and teachings of Bichat, Laennec, Bretonneau, Trousseau, and Billard. Barthez and Rilliet adopted the pathological and clinical precepts of these masters, and wrote an excellent book, which contains a chapter describing pyelitis in children. A study of their reported cases shows that the disease was caused for the most part by renal and vesical calculi.

We next find pyelitis in children receiving attention in Gerhardt's "Handbuch der Kinderheilkunde," which was published in 1876. Alois Monti, who was a student of Wiederhofer, and later a professor of pediatrics in Vienna, contributed a paper on the subject to this encyclopedia. Monti described the clinical findings and also found that pyelitis was frequently the result of irritation caused by calculi in the urinary tract.

Hüttenbrenner, also a student of Wiederhofer and a contemporary of Monti, and attending physician at the Carolinen Kinderspital in Vienna, recognized pyelitis and described it in his textbook and in special articles. In 1876 he gave a classical description of the disorder.

Hans Kundrat, the pathologist, a contemporary of Hüttenbrenner, wrote in a special paper that pyelitis in children was a more frequent disease than was commonly recognized. Unger, who was an assistant of Henoch in Berlin, also wrote on the same subject, and Hirschsprung called attention to this disorder of childhood in 1893. The following year Theodore Escherich gave the subject a new meaning when he discovered that it was most often caused by the colon bacillus, and you will recall that he discovered this organism. He first described the disease under the caption of colicystitis. He thought it was frequent, that it occurred most often in little girls, and that the ailment usually ran a febrile course.

Finkelstein, in 1895, made some pathological studies on babies who had suffered from pyelitis and pointed out that the pelvis of the kidney was inflamed and that secondary infection of the kidneys was not uncommon.

The first published report of Escherich (1894) in the "Jahrbuch für Kinderheilkunde" attracted wide attention and case reports were published in all parts of the world. It was found that the disease had been previously overlooked, and that it was of frequent occurrence. Indeed, at this time many a physician discovered the disease in his own community.

That is an important phase in the progress of medicine. A physician in the community, or in a wider territory, pays attention to a certain disease, even if he was not the original discoverer, studies its literature and its pathology and symptomatology, and then he popularizes the knowledge about that disease among the physicians where his influence is exerted. That is what happened with reference to pyelitis.

Impressed by the writings of Escherich, at that time of Graz, John Thomson of Edinburgh, and other distinguished clinicians, physicians everywhere began to search for patients suffering with this disease. Up to this time the urine of infants and young children was examined only in exceptional cases. It was thought difficult or even impossible to collect the urine from these little patients.

The first patients with pyelitis that we encountered were children suffering from marasmus, or those who had gastro-intestinal disorders and were dehydrated. We found not a few babies in this group who were suffering from fever and pyuria.

Czerny's assistant, Dr. E. Schiff, in his classical article on exsiccosis or dehydration, called

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attention to the fact that both in his experimental work on animals and in his clinical observations on dehydration in babies, pyelitis occurred with remarkable frequency. This is probably a result of the lowered resistance of the dehydrated babies and the readiness with which they become infected.

In the same way, infectious processes in the remote parts of the body may be associated with pyuria. You will all recall, from your own experience, cases of acute respiratory infection, as well as furunculosis, and dysentery which have been associated with severe pyuria. I am particularly reminded of the influenza epidemic of 1917 and 1918 in which many babies, in addition to the influenza infection, showed quantities of pus in an acid urine. This was particularly true of premature and delicate babies suffering from influenza.

To illustrate some types we encountered, I shall recall a few case histories. The first that comes to my mind is a four months old baby, a doctor's daughter. The baby was suffering from a continued high temperature. She had received a good deal of calomel and other physic, and had by the time I saw her a profuse diarrhea. We immediately obtained some urine by catheter and found that it contained not only pus but also a few blood cells, hyalin and granular casts. This baby, as so frequently happens, suffered not only from an inflammation in the pelvis of the kidney, but she undoubtedly had a pyelonephritis. We find most frequently in infectious and inflammatory processes that nature does not respect rigid lines like those on a geographical atlas, but that inflammation spreads to adjacent parts. And so it is that infection of the pelvis of the kidney may be associated with inflammation of the kidney itself. It has been maintained that most cases of so-called pyelitis involve sooner or later the parenchyma of the kidney.

This child, after having been severely ill for a number of days, improved materially, and the blood and casts disappeared from the urine, though the pyuria continued for many weeks.

I have occasionally seen children in whom the pyelitis was ushered in by nervous and meningeal symptoms. I recall a child of three months who was brought to the hospital with high fever, convulsions, and rigidity of the neck. Her urine, which was promptly obtained, contained pus cells and a few casts. In 24 hours the nervous symptoms had disappeared, though the fever and pyuria continued.

Another infant of 5 months fell ill suddenly, with high fever, convulsions, and rigidity of the neck. She was stuporous and we feared that she was suffering from meningitis. A lumbar puncture was performed: the fluid was clear, contained a minimal number of cells and no globulin. When the urine was examined the following day, it was found to be highly acid and thick with pus. I presume that these cases are not rare, and that they have occurred in everyone's practice. I merely cite them to show how misleading the symptoms may be at the onset of pyelitis.

I recall several patients where the disease was characterized by frequent recurrence and chronicity of the attacks. One little girl baby of seven months presented the usual symptoms of fever, pyuria, anorexia, vomiting, and abdominal pain. The fever was irregular and of the septic type. She had frequent recurrences, and acute infection of any kind would light up a fresh attack. Even as an older child, she was troubled with pyuria at intervals, perhaps less frequently than during the first years of life. Violent or prolonged physical exercise would sometimes bring on an attack in this little girl. I recall that during her eighth year she went on a roller skating debauch, traveling to the park and back, a distance of about four miles. She returned home hot and tired, and the following day had fever with marked pyuria. But she survived it all. She is now the mother of two children, had normal pregnancies and labors and seems to be in good health. I stress this last point because it has been so frequently stated that the pyelitis of pregnancy can frequently be traced back to infantile and childhood pyelitis.

I recall another little girl baby, also a doctor's daughter, who had repeated attacks of pyelitis during infancy, with recurrences up to the fifth year. She had all of the usual symptoms, and in addition, as I recall it, a pallor, which was marked during the recurring attacks. All of you remember that pallor is one of the frequent and striking manifestations of acute and protracted pyelitis. This little girl to whom I have just referred has also grown to womanhood. She is a tall, robust, healthy woman and the mother of three healthy boys. Her pregnancy and parturition in each case was normal.

I saw a little boy baby, less than six months of age, who upon examination presented a mass on the right side in the lumbar region. The mass was plainly palpable, readily movable, and its position and outline suggested an enlarged kidney. This child was emaciated, extremely pale, had a septic type of temperature, vomited, and the urine contained a great quantity of pus. The several consultants who had examined the baby remained with him for several hours until he died. An autopsy was performed and it was found that the right kidney was very much enlarged, though there were no congenital malformations in the kidney, ureter, or bladder, which could be discovered. The kidney itself was full of abscess cavities and the parenchyma of the organ was almost destroyed. The left kidney was also involved, though to a much less degree.

I should also mention in this connection that during the earlier days, when typhoid fever was widely prevalent, pyelitis due to bacillus typhosus was not of infrequent occurrence and sometimes protracted the disease, frequently constituting the patient a typhoid carrier.

The subject of congenital malformations of the kidney is one which interests every pediatrician as well as urologist. These cases may occur in the new-born as well as in very young infants. My son, Dr. Arthur F. Abt, in association with Dr. Shapiro, reported a severe pyuria associated with high temperature, on the fourth day of life. This infant cried, strained, and seemed to be in pain when she voided. The patient continued to run a septic course with continued pyuria. A catheter passed into the right ureter showed a drip of thick pus. After some study, the right kidney was removed, which showed a right hydroureter and pyonephrosis. After this the patient made an uneventful recovery and is living in good health at present.

They report another case, a male child five and a half months old, who also showed cloudy urine, and continued high temperature, with pain on voiding. In this case the right kidney was involved, as in the previous child. A nephrectomy was performed; it was found to be markedly enlarged, and two ureters were present and dissected out to the bladder. The calices were tremendously dilated, the pelvis of the kidney was extremely large. Of the two ureters, one was considerably dilated. This dilated ureter was tortuous and presented numerous pockets. The ureterovesical valve was competent.

In these two patients the pyuria occurred as a result of congenital malformations, and the symptoms presenting themselves during early infancy depended on developmental errors. In my earlier experience, I frequently discovered, during post mortem investigations, congenital malformations of the kidneys and strictures or reduplication of the ureters.

In one of my early cases a fused kidney presenting a tumor in the median line was associated with persistent fever, pyuria, and finally death.

I have seen diverticula of the bladder give rise to pyuria, as well as dilated or megalo-ureters, and also those that were narrowed by congenital strictures. Sometimes there was a stenosis of the inferior uretral opening, possibly the result of an inflammatory process. I have published elsewhere a series of cases with various forms of renal and uretral malformations.

It seems superfluous to discuss the treatment of pyelitis before a group of well-informed practitioners and pediatricians. Nevertheless, for the sake of completeness, I wish to say a word about the plan of treatment I usually employ. Everyone recognizes the importance of giving these patients an abundance of fluid, by mouth if possible, subcutaneously, intravenously, or by rectum, if necessary. I have already called attention to the fact that E. Schiff found many cases of pyelitis among a large group of dehydrated children, which he studied. He found that this condition improved with increased fluid intake and recovery from the exsiccosis. The administration of alkaline preparations such as the citrates, or the carbonate or bicarbonate salts of sodium or potassium, sometimes leads to decided improvement. Urotropin has usually given me good results, though I am not unmindful of the fact that it may cause irritation and erythruria. As a rule, during infection, I have used small doses, usually 1 grain five or six times daily. This may be combined with appropriate doses of ammonium chloride, though I have seemed to get the best results with a combination of salol and urotropin, using 1 grain of each five or six times daily.

During the acute stage, these patients, like all febrile cases, require rest in bed, though in those in whom the fever has subsided, even if the

pyuria persist, the bed rest should not be protracted over too long a period. Those who are old enough to walk should be allowed to be on their feet, because I believe that a more perfect urinary drainage occurs when the patients are in the erect position.

The ketogenic diet has been suggested in the treatment of these patients, though I have had no personal experience with it. You will recall that it has been recommended by some clinicians and has been reported upon favorably.

Now a last word about the persistent cases of pyuria. Where medical treatment of every kind is of no avail or where there are frequent recurrences with fever, it will be necessary to call urological consultation. In some of these protracted, febrile cases it will be found that a pyelonephrosis is responsible for the protracted pyuria; or a congenital or acquired malformation as well may produce persistent pyuria with septic temperature and emaciation. In these cases nothing is left but radical surgical intervention.

## DISCUSSION

Dr. Arthur Sprenger (Peoria): I am very much pleased to hear Dr. Abt state that consultation between pediatrician and urologist is frequently necessary. To me that is a very hopeful sign.

You know, pediatric urology is going through its growing-pain stage and is gradually coming into its own.

You are aware, no doubt, that outside of the few systems on pediatrics in which urology is taken up, there is but one volume at the present time by Beer and Hyman of New York City.

The greatest problem confronting the pediatrician is to obtain permission from the family to have a complete urological examination made. And that is particularly necessary in those cases of pyuria with septic temperature who have shown little or no improvement under medical treatment.

These cases should be subjected to a complete examination just as quickly as an adult. The cystoscopic examination is a minor procedure requiring ether anesthesia. There is practically no reaction, a definite positive diagnosis is the result and you know how to direct the case intelligently.

If you have, as Dr. Abt has told you, a surgical condition your diagnosis is quite easily made, particularly in that type where you have obstructive lesions, congenital malformations, etc. And they are not so uncommon. In our experience lesions of this type are seen relatively frequently, and those of you who attend the radiological conference tomorrow will hear a paper by Dr. John Venachen of Peoria with whom I have done practically all of my work, in which he will show slides of congenital malformations in which nephrectomy has been necessary.

In the treatment of infantile pyuria we find that the majority of cases may be treated medically. And when urological examination discloses good drainage the case is immediately referred back to the pediatrician for attention.

The use of urinary antiseptics other than hexamethylene in a urine with a p H of 5.3 or less has been discontinued.

The ketogenic diet stressed by Clark and Helmholz has been very satisfactory in maintaining an acid urine in the adult but we have found its use quite difficult in the juvenile cases.

The pediatrician and urologist must get together when confronted with a case of pyuria and temperature which shows no sign of abating over a period of several weeks. If urological examination at this time rules out a surgical condition such as renal calculi, urethral valves, etc., you can continue your treatment by acidifying the urine and forcing fluids as Dr. Abt has so ably told you.

The whole matter of treatment is similar to the care given in adults. The pathology with the exception of prostatic enlargement is very much alike. Fibrosis at the bladder neck with a resulting back pressure produces a dilated bladder, ureters and kidneys and the treatment remains the same; viz., removal of the obstruction.

In conclusion it is my firm conviction that many cases with obscure pathology who later on in life require nephrectomy will be cleared up when pediatrician, urologist and roentgenologist work in harmony.

Dr. Joseph Brennemann (Chicago): My introduction to pyuria—I rather prefer to call it pyuria than pyelitis because we are then on surer ground—was a rather painful one and therefore I have always been interested in the subject.

I think it was one of the cases Dr. Abt spoke of that I saw in the first two or three years of my practice when I really was not quite ripe for taking care of a very rich patient. The little female baby in question had several bouts of temperature and in those days it was hard for us to appreciate that babies had anything else than bowels, an idea that has not yet become wholly extinct. We had several consultations that led nowhere. Finally one day the family decided they wanted another consultant and that it might be better to turn the child over to the other consultant. I have always subscribed to the wisdom of such a procedure and I was quite agreeable in this instance, especially as the other man was Dr. Abt. In his nice way, Dr. Abt told me the child had a lot of pus in the urine and that possibly that explained the condition. I think I have never missed one of these cases in my subsequent practice. We generally learn more from our mistakes than from our correct diagnoses.

There is just one thing that I would like to emphasize in discussing Dr. Abt's paper that I think he did not emphasize as much as he would have if he had not been cut short at the end. We used to call all of these cases of pyuria 'pyelitis' and they were practically all restricted to female children during the diaper age and

we thought of them as an ascending infection due to the colon bacillus. We have sort of gotten away from the habit of calling these cases pyelitis because we do not really know whether that is the important lesion or not. Schloss, to my mind erroneously, has said there is no such thing because they have never found a pyelitis at necropsy. The reason for that, of course, may easily be that a child with pyelitis never dies, and that if they die they have usually some more serious infection of the parenchyma of the kidney. It seems to me that we do not see as many of these cases as we used to and that now we see a much larger number of children with a more serious infection of the uro-genital tract. I refer to the type of case that is fairly frequent which occurs in either sex and which, in spite of any ordinary treatment,—and I am not sure that it makes a tremendous amount of difference what that treatment is,—do not get well after a reasonable time. In practically all of those cases we find that there is back of it an anatomical condition, usually a congenital anomaly. We nearly always have two or three of these under consideration and have worked very closely with Dr. Kretschmer in the matter. In other words, if a child with a pyuria does not get well within a reasonable time, a urologist should be called in and usually the trouble will be found in an obstruction of a ureter or in a vesical neck obstruction or in some other congenital anomaly. Especially valuable as simpler procedures are the newer methods of visualizing the urinary tract by the intravenous injection of Skiodan or Neoskiodan. This has illuminated a whole field that before has been dark. We like to watch the urologists a bit because they are apt to think of babies and young children in terms of adults and there are certain distinctly pediatric aspects to these problems. By such team work, however, we feel that in this whole field one gets most gratifying results.

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## CHRONIC CICATRIZING ENTERITIS REGIONAL ILEITIS (CROHN)

B. C. Cushway, M. D.

CHICAGO

Study of the medical literature reveals considerable interest in a condition described under the various names of "nonspecific granuloma," "benign granuloma," "infectious granuloma" and "inflammatory tumor of the intestine." These terms cover a multiplicity of pathological lesions, involving both the large and small intestine.

The significance of simple inflammatory tumors of the gastrointestinal tract was pointed out by Moynihan[1] in 1907. He operated on six cases under the mistaken impression they were malignant disease. Clinical and gross appearance supported diagnosis of malignancy, but microscopic section proved them to be non-malignant in character.

In 1908 Robson,[2] discussing abdominal tumors simulating malignancy stated "that the simple inflammatory tumor of the intestine was relatively common and that it was a difficult problem of abdominal diagnosis."

A good account of what they named non-specific granulomata of the intestine was given in 1923 by Moschcowitz and Wilensky.[3] Dalziel[4] described a chronic interstitial enteritis in 1913. The condition was also reported by Mock[5] in 1931. Of the cases reported by Mock, three involved the omentum, three the stomach, one the ileum and three the large bowel, cecum, splenic flexure and sigmoid. More recently Crohn, Ginzburg and Oppenheimer[6] in 1932 have attempted to isolate from the large, non-specific group of granulomata a clean cut entity which they have named, "regional ileitis." Still more recently Harris, Bell and Brunn[7] report a series of cases having the characteristics of regional ileitis for which the term "cicatrizing enteritis" is suggested.

It is upon the report of these two groups of cases, namely, "The Regional Ileitis" (Crohn) and "The Cicatrizing Enteritis" (Harris) that the presentation of this paper is based. There is some difference of opinion as to which terminology is more appropriate. The term regional ileitis would locate a pathological lesion in the terminal portion of the ileum. As these lesions have been reported as occurring in other portions of the small intestine, as for instance, in the jejunum and elsewhere in the ileum the term "cicatrizing enteritis" might perhaps be considered more descriptive. Pathological lesions, having similar characteristics, have been observed involving the cecum and other portions of the colon. In most instances the pathological process was characterized by a chronic proliferative inflammatory reaction in which the most outstanding features were extensive mucosal ulcerations with thickening of the wall and constriction of the lumen of the bowel. The cases reported by Crohn, also by Harris and their associates were, with the exception of one case, characterized by the location of the pathology in the terminal portion of the ileum. As such they present a rather characteristic clinical picture but perhaps not a definite pathological entity.

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In at least one of the cases of this condition to be described by the writer a portion of the cecum and the base of the appendix were involved. It would perhaps be more logical to make the report of these cases under the terminology of "cicatrizing enteritis," Harris.

Defined briefly by the authors mentioned, "cicatrizing enteritis" or "regional ileitis" is a disease of the terminal ileum affecting mainly young adults and characterized by a subacute or chronic ulcerating and cicatrizing inflammation of all the coats of the ileum. It frequently leads to stenosis of the lumen and is often associated with fistula formation and a tumor mass in the right lower quadrant.

The pathology is most characteristic when confined to the lower ileum. The lesion is marked here by very decided edema and thickening of the intestinal wall, usually with an extensive lymphadenitis in the mesentery and at least a limited amount of ulceration of the mucosa. There is a tendency to perforation, usually not accompanied by peritonitis but causing a local reaction and the formation of a fistula into a neighboring bowel, most often the ascending colon. Microscopically no specific features can be demonstrated. Sections show various degrees of acute, subacute and chronic inflammation.

*Etiology.* The most probable etiological factor is that of infection. The dysentery bacillus has been found in one case observed by Jaffe. It has been suggested that interference with the local blood supply might be a cause, necrosis and low grade infection stimulating in the adjacent areas a reactive reparative process. Infection necrosis and reactive repair proceed hand in hand but the latter eventually predominates with the resultant progressive piling up of granulation tissue until a tumor like mass is formed. These factors may be classified under three headings, first, infections within the gastrointestinal tract or its mesentery, second, extraperitoneal infections, third, trauma due to surgical procedure or extraneous injury.

*Symptomatology.* The condition is usually chronic and symptoms are rather vague. Erratic sorts of colic usually have been reported. Frequent movements of the bowels, occasionally with serious diarrhea. There may be excessive mucus in the movements and occasionally blood. As there is a tendency to obstruction which is chronic and progressive the signs of obstruction frequently lead to the discovery of the tumor mass with constriction of the bowel at the operating table. Crohn and his associates distinguish four types of this disease, first, acute type, showing signs of intra-abdominal inflammation, second, ulcerating type with symptoms of ulcerative enteritis, third, stenotic type with symptoms of chronic obstruction of the small intestine and fourth, fistulous type with persistent and intractable fistula in right lower quadrant. In type one, before operation, these cases are almost impossible to distinguish from acute appendicitis. Pain and tenderness over the right lower quadrant, with fever 101 to 102 and moderate leukocytosis are present. Type two, symptoms of ulcerative enteritis; there is a history of diarrhea associated with colic like pain around the umbilicus and lower abdomen related to defecation. There is a constant low grade fever present with loss of weight and a pronounced secondary anemia. Type three, stenotic phase, is the type most commonly found. The symptoms are those of a partial obstruction in the small intestine, cramps with attacks of vomiting and constipation, with distention and finally a palpable mass in the right lower quadrant. Type four, fistulous phase; fistula formation is fairly constant in this disease. More commonly the connection is with the sigmoid, next in frequency the cecum and ascending colon. Practically diagnostic of the disease is a fistula in the abdominal wall persisting and appearing after operation for a supposed acute appendicitis and the removal of an innocent appendix. These fistulae may develop months after the drainage operation for a supposed appendiceal abscess. The original wound may heal and the first sign of the fistula is the appearance of an abscess in the wall, which on being opened is found to lead into the intestines.

*Roentgenographic findings.* This condition may be easily overlooked by the competent roentgenologist. It may not be recognized unless clinical symptoms might suggest the presence of this pathology and thus indicate the need of serial fluoroscopic study and films with the barium meal. Such examinations should show delay in the small bowel with stasis and dilatation in the terminal portion of the ileum early in the disease. Later in the stenotic phase there will be definite evidence of obstruction with

stasis of the opaque material and marked dilatation of small bowel loops. There may be definite deformity shown involving the cecum and ileocecal valve. In two of the cases to be reported by the writer, this condition was present. In one, the cecum was perfectly smooth. In some cases the deformity of the cecum may simulate a pressure defect, while in others the defect may be similar to that of a new growth or malignancy. The above findings definitely suggest cicatrizing enteritis. Negative findings with the opaque meal by mouth or the barium enema in the presence of symptoms simulating ulcerative colitis or tuberculosis are suggestive of cicatrizing enteritis. Such negative findings with the opaque enema with clinical features suggestive of colitis and enteritis should suggest the possibility of cicatrizing enteritis and the advisability of making a careful serial roentgenological examination with the opaque meal. The interval studies of the small bowel after the administration of the opaque meal orally will show a definite delay in motility of the meal through the distal end of the small intestine. In the four, six and nine hour observations this delayed motility is usually present, though only in the late or stenotic stages is the delay striking. The milder degrees of stasis may easily be overlooked if the roentgenologist does not have the possibility of this condition in mind. While negative findings with the opaque enema may only give suggestive evidence of this condition, in certain cases the enema may give more definite findings. This happened in one of the cases to be reported here, where the opaque material spilling over from the cecum through the ileocecal valve showed a definite constriction and stenosis in the terminal portion of the ileum. The writer advises serial or interval studies of the small bowel at four, six, nine and twelve hour intervals with the opaque meal given orally, followed by the opaque enema study of the colon, cecum and if possible the terminal ileum.

*Differential Diagnosis.* Cicatricial enteritis must be differentiated from conditions which produce a mass in the right iliac region with diarrhea and fever and low grade or severe obstruction.

1. Ulcerative colitis; usually colitis may be recognized by roentgenologic studies with the opaque enema. The spasm deformity of the portions of the colon involved and obliteration of haustra are quite characteristic of colitis. In cicatricial enteritis changes are usually proximal to the ileocecal valve. A mass is rarely palpable in colitis.

2. Ileocecal tuberculosis; this is probably rare as a primary process and should be easily differentiated because of the deformity caused by spasm associated with tuberculosis. In cicatrizing enteritis there is rarely spasm shown associated with the cecum. Only in occasional cases is the cecum deformed.

3. Typhlitis or cecitis; usually cause more deformity and spasm of the cecum than is present in cicatrizing enteritis.

4. Lymphosarcoma, intestinal or mesenteric tuberculosis and Hodgkin's disease may simulate cicatrizing enteritis because of palpable mass and obstructive symptoms.

5. Actinomycosis of the ileocecal region with fistula formation to the external abdominal wall should be considered although rarely found in this region.

6. The differential diagnosis between cicatrizing enteritis and malignancy of the terminal ileum, ilecocecal valve or appendix may give considerable difficulty and may not be possible even at the operating table. It is usually only made by microscopic examination of tissue.

*Treatment.* Medical treatment is purely palliative, symptomatic and supportive. Surgical resection of the diseased segment of the small intestine and of the ileocecal valve with the contiguous cecum is practically the only treatment. Crohn, Ginzburg and Oppenheimer report restoration to complete health in thirteen out of fourteen cases as a result of radical resection. A. A. Berg of New York who has had considerable experience in the surgical treatment of this condition advocates resection with ileocolostomy as the operation of choice. The writer in this presentation reports two cases successfully treated by radical resection.

*Case 1.* G. K., white female, single, age 25 years, admitted to Evangelical Hospital, November 20, 1933, had been having symptoms of chronic abdominal trouble for three to four years. Had appendix removed November 2, 1932. Felt slightly improved after removal of appendix but continued to run a temperature of 99.6 or slightly higher. October, 1933, had attack of pain in right lower quadrant. Was nauseated and vomited at intervals for two or three days. Had dull pain and tenderness in right lower quadrant, since, with two attacks of nausea and vomiting. Last attack November 16, 1933. Lost eight pounds in last two weeks.

Examination discloses operative scar in appendix region with definite tenderness just outside of scar in right lower quadrant. Clinical diagnosis, adhesions from appendiceal scar causing partial obstruction, possible abscess or a tuberculous condition in right lower pelvis.

Roentgenographic studies show on fluoroscopic observation tenderness to pressure over the cecum and ileocecal region. Immobilization of the cecum with distortion of medial cecal wall. Serial films at six, nine and twelve hour intervals after the ingestion of the opaque meal orally show definite stasis in the terminal portion of the ileum with dilated loops of small bowel, narrowed terminal ileum and deformity in medial portion of cecum suggesting a pressure defect. Interpretation of roentgenological findings: Inflammatory exudate in ileocecal region or possible new growth. Patient

Figure 1. Case 1. Roentgenogram at nine hours, showing stasis and dilatation of terminal ileum with defect in cecum, marked distension of coils of terminal ileum.

Figure 2. Case 2. Roentgenogram of barium enema, showing defect in cecum and no filling through ileocecal valve into terminal portion of ileum.

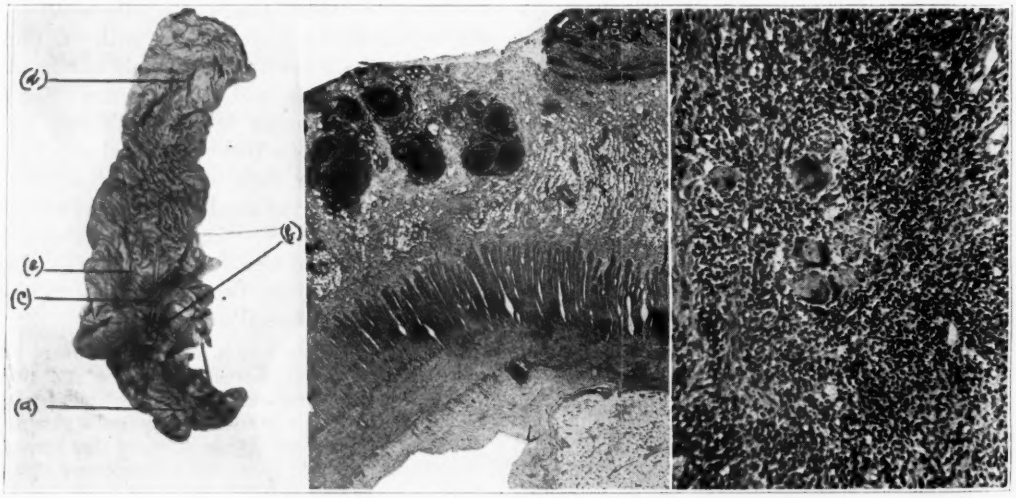


Figure 3. Case 1. Photograph of the gross specimen, showing stenosis of ileocecal valve. Thickening of walls of terminal ileum and cecum. (a) Terminal ileum (b) Ileocecal valve (c) Glass rod through lumen of valve (d) ascending colon (e) Cecum.

Figure 4. Case 1. Photomicrograph of section of terminal ileum near ileocecal valve showing thickened wall and chronic inflammatory changes.

Figure 5. Case 1. Photomicrograph of granulomatous lesion in ileocecal valve with giant cells resembling tuberculosis.

was operated on, November 27, 1933, with a diagnosis of probable tuberculosis of ileocecal region or carcinoma of the cecum and ascending colon. At operation the terminal portion of the ileum was found to have edematous, thickened wall with a definite narrowing of the lumen. There was marked rigidity and hardening of the ileocecal valve. Many enlarged pericecal lymphnodes were found with many adhesions around the cecum and terminal ileum. The thickening of the walls of the ileum together with the induration around the ileocecal valve and medial wall of cecum simulated the appearance of a tumor. A resection of the cecum, a portion of the ileum and the ascending colon with anastomosis of the ileum and the colon was done.

Pathological report, by P. A. Delaney, M. D., of Englewood Hospital:

Gross. Specimen consists of a small portion of terminal ileum, cecum and ascending colon. There is a marked stenosis of the ileocecal valve, the opening barely admitting a lead pencil. There is a healed appendiceal stump, with small depressions in the overlying cecal mucosa, under which the wall is thickened and indurated, apparently from fibrous connective tissue; this induration involves the ileocecal valve region. The terminal ileum is markedly thickened, in contrast 2-3 times thicker than the cecum or the colon. The pericecal lymphnodes are enlarged from congestion and edema.

Microscopic. Section removed from the terminal ileum near the thickened ileocecal valve wall, microscopically represents acute and chronic inflammatory changes involving all of the wall layers but most marked in the mucosa and the submucosa. There is associated definite thickening of the submucosa from fibrous tissue hyperplasia, and of the muscularis from definite increase in its smooth muscle elements. There is an average number of lieberkuhn crypts. The muscularis mucosa is prominent. The lymphoid follicles are prominent with definite hyperplasia of their germinal centers.

There is no evidence of carcinomatous changes in any of the tissue described above. The condition is a perfect picture of what has been described as "Regional ileitis" by Crohn et al, in the Oct. 15, 1932 issue of the J. A. M. A. and in the Nov. 1933, Surgery, Gynecology and Obstetrics by Franklin I. Harris and his coworkers. Sections especially treated are negative for Spirochetes and for acid-fast bacilli.

The results of operative treatment were excellent. The patient made an uneventful recovery and at the present time is enjoying excellent health with no abdominal symptoms.

*Case 2.* M. M., white female aged 27 years, married, no children. Admitted to St. Bernard Hospital January 14, 1933. States that for the last two years has been suffering with a sense of fullness in the epigastrium with flatulence. Condition became more severe four months previous to entering hospital. At this time attacks of intermittent sharp pain accompanied by vomiting were present. Physical examination shows entire abdominal wall rigid and slightly tender. Pain on palpation over epigastrium and right lower quadrant. There is a scar in the appendix region following appendectomy three years ago. Clinical Diagnosis, chronic obstruction near ileocecal junction.

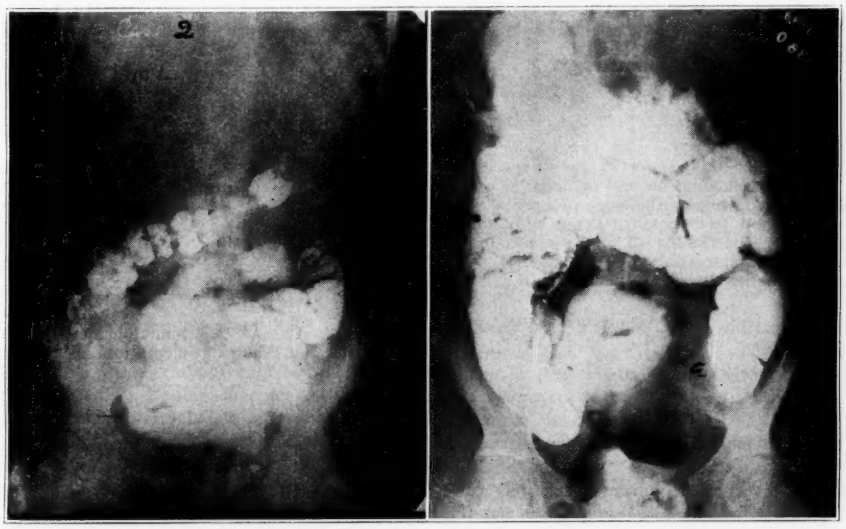

Figure 6. Case 2. Roentgenogram showing stasis and dilatation of coils of terminal ileum at twelve hour period of study with a narrow constricted ileum at ileocecal valve.

Figure 7. Case 2. Roentgenogram showing barium enema passing through ileocecal valve into ileum in a tiny stream. (a) ileocecal valve.

Roentgenographic studies show definite stasis in terminal ileum with a narrow constricted ileum at ileocecal valve. Tenderness and fixation observed during fluoroscopic study in ileocecal region. Contrast enema showed slight regurgitation through ileocecal valve dis-

closing definite stenosis of ileocecal valve and terminal portion of ileum. Interpretation of the roentgenographic findings; Low grade obstruction in ileocecal region, probably the results of adhesions in previous appendix pathology. Patient was operated on January 28, 1933. Pre-operative diagnosis; obstruction in ileocecal region. Operation disclosed a large mass involving the distal terminal portion of the ileum with dilation of ileum proximal to mass. A resection of the terminal portion of the ileum with cecum and a portion of the ascending colon was done with anastomosis between small bowel and colon.

Figure 8. Case 2. Photograph of gross specimen. (a) shows marked thickening of wall of ileum at proximal end of strictured portion (b) edge of opened ileocecal valve (c) cecum (d) proximal ileum with edema and numerous tiny ulcerations of mucous membrane (e) mesentery with enlarged lymph glands, and peritoneal hemorrhages due to surgical trauma.

Pathological report by C. C. Guy, M. D., St. Bernard's Hospital:

This specimen consists of resected bowel, including 34 cm. of distal ileum and its attached mesentery and 6 cm. of cecum. The wall of the distal ileum is markedly thickened and firm, but not stony-hard, for a distance of 6 cm., beginning 2.5 cm. from the ileocecal valve. In this area the lumen is definitely constricted. The walls here are pale grey-pink, and the mucosa is absent except for a few remaining patches. The ileum gradually dilates proximal to the constricted portion. The lining of this part of the ileum is a dark purple-red, and granular from enlarged lymph follicles, at the apices of many of which are tiny ulcerations. The walls of the ileocecal valve are indurated, but the mucosa is not ulcerated, and the valve is patent. The appendix is absent from the cecum, and its base is represented by a small, puckered scar. The lining mucosa of the cecum is somewhat edematous, with numerous petechial hemorrhages and tiny superficial ulcerations. The fat of the mesentery is moderately firm and yellow, and embedded in it are three purple, wet, firm, homogeneous lymph glands, up to 1.2 cm. in length.

Sections show a marked chronic inflammatory process in the walls of the ileum. The mucosa is altered by scarring, granulation tissue and infiltration of leukocytes and round cells. The submucosa is thickened and scarred, with enlarged lymph follicles, showing no distinct germinal centers. The muscularis is hypertrophic, and the individual bundles of muscle are separated by edema and cellular infiltrations. Similar collections of cells with edema and granulations alter the serosa. There is no evidence of malignancy or tuberculosis.

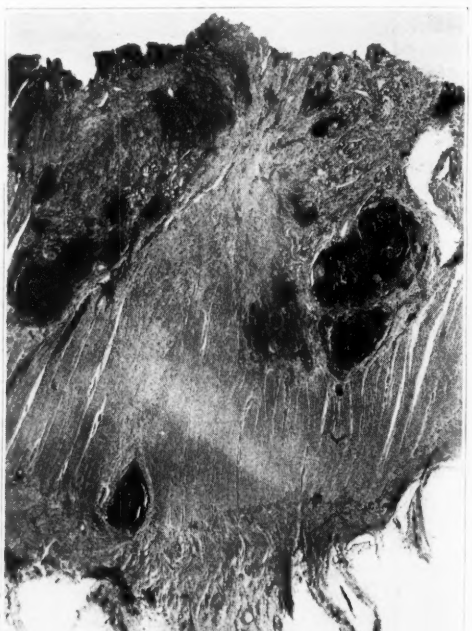

Figure 9. Case 2. Photomicrograph of tissue from terminal ileum, showing ulceration and marked lymphoid tissue.

Diagnosis: Chronic inflammatory (non-specific) Stenosis of the Distal Ileum.

The operative results were good. The patient made an excellent recovery and is well at the time of the present writing.

Case 3. S. R., white, male, aged 50 years, married. Admitted to the Evangelical Hospital, December 10, 1933. Complains of pain in right lower quadrant during the past two months. Temperature 100. Pain aggravated by a rather persistent cough. Patient has lost a small amount of weight during the last month.

During the last two weeks patient noticed a mass in the right lower quadrant when coughing. Physical examination shows evidence of slight abdominal distention, tenderness and rigidity lower right quadrant, round mass size of grapefruit palpable in right lower quadrant.

this condition best. Three cases have been reported, all showing rather characteristic clinical symptoms. Two of these cases have been proved by definite pathological findings.

The third case reported is doubtful as to

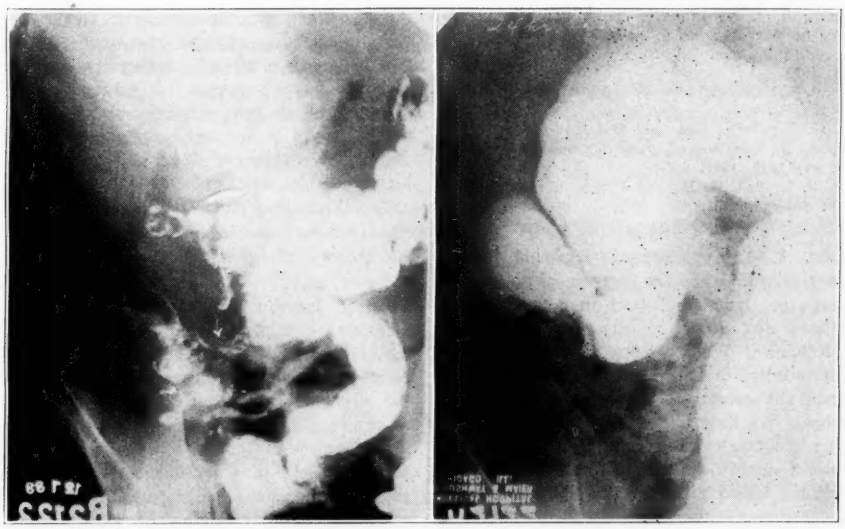

Figure 10. Case 3. Roentgenogram at twelve hour study, showing stasis with dilated coils of terminal ileum with area of constriction near cecum, also defect in cecum.

Figure 11. Case 3. Roentgenogram of barium enema study, showing obstruction of cecum with defect in filling and nothing passing through ileocecal valve.

Roentgenographic studies show evidence of low grade obstruction at terminal portion of ileum. Definite deformity with filling defect involving the cecum and terminal ileum. Cecum, ileocecal region and terminal ileum fixed and tender. Interpretation: Obstruction at terminal ileum with inflammatory exudate or neoplasm involving cecum. Exploratory operation was performed disclosing a large mass involving cecum, ileocecal region and terminal ileum. The visceral peritoneum was edematous, thickened and adherent to the mass. Patient's condition did not justify resection and death took place a short time later. In most respects the clinical symptoms and in some respects the roentgenological findings were similar to those found in cases 1 and 2 and are at least suggestive of the same type of pathology.

If the condition was a malignancy and not a case of cicatrizing enteritis at least this case demonstrates the difficulties of diagnosing this lesion.

## SUMMARY

A brief review of the literature of so-called "infectious granuloma" together with the more recent reports of this condition under the name "Regional Ileitis" and "Cicatrizing Enteritis" has been presented. In view of the reports made by various authors covering these conditions and also the experience of the writer, it would seem that the term "Cicatrizing Enteritis" describes pathological classification but showed the clinical and roentgenographic findings of "Cicatrizing Enteritis." The writer believes this pathology may occur with a fair degree of frequency. The diagnosis can only be made pre-operatively from roentgenological studies.

Crohn, Ginzburg and Oppenheimer, in isolating this condition from the confusion of benign inflammatory lesions have splendidly demonstrated a new disease entity. Harris, Bell and Brunn have further clarified the situation by suggesting what seems to be a more descriptive term. Clinically the disease occurs mostly in young adults with symptoms of ulcerative colitis. Often these cases may be mistakenly operated on for appendicitis. The disease eventually leads to obstruction of the small bowel with characteristic symptoms of obstruction. The physical findings are those of a tumor mass in the region involved with quite commonly the formation of a fistula. There is no definite known etiology. The pathology is constant both macroscopic and microscopic. The disease is benign and is most commonly found in the terminal ileum.

It is hoped by this report to stimulate an interest in this pathology so that the roentgenologist will be on the alert and ready to recognize this condition.

Radiologist, St. Bernard's, Evangelical and Englewood Hospitals

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## DISCUSSION

Dr. Robert A. Arens, Chicago: I should like to bring out two points. I had the pleasure of going over Dr. Cushway's paper and find much in it to commend.

He mentioned that two of his cases were postoperative appendectomies. We have many cases, at least I see them frequently, in which the appendix has been removed, and the symptoms persist, also, mostly in younger people. We have found in many of these cases a small patch clinging to the cecum, an area which we have felt was a small ulcerated area, or so-called postoperative cecitis, which gives all the signs and symptoms of the previous pathological appendix.

That brings me to the second point, and that is I believe that most of us have practically discontinued looking for small intestinal pathology, due to our setup, where we very frequently take primary gall-bladder films, or where we do a cholecystogram and find out whether there is a presence or absence of stones, and then make a gastrointestinal study. We find at the end of the day that we do not have time enough to observe the barium in the small intestine, particularly in the region of the terminal ileum.

Dr. Cushway has called our attention to the observation of five, seven and nine hours. Possibly that should be continued beyond that point. The way the average radiologist is working today most of us overlook that time period.

I feel that I have been very fortunate in hearing this paper because it is just going to make me go back and work that much harder on the terminal ileum in the lower right quadrant.

Dr. Harry Olin, Chicago: I am afraid that Dr. Cushway and Dr. Arens have covered this subject so well there is very little left for me to say. I will just summarize with a few notes that I made, as I had the good fortune of obtaining Dr. Cushway's paper sometime ago.

This paper is not only instructive and interesting, but very timely. Dr. Cushway has covered the ground exceptionally well and is to be complimented for this excellent thesis. Chronic inflammatory conditions always will puzzle the clinician and roentgenologist, and any new light shed on this atypical syndrome is very welcome at this time. Two important considerations are necessary to bear in mind if the roentgenologist and clinician are to recognize this condition. First is a painstaking careful history in which due note of a previous operation or operations may be an influencing antecedent. Secondly, as has been emphasized, a careful serial roentgenologic examination should be made to include an opaque meal and barium enema. For practical purposes the location of the mass in which is produced the cicatrizing process determines the region and structures involved. In the greater number of instances only the microscope will reveal the true diagnosis, although malignancy is probably the most common suspicion. Roentgenologically in the majority of instances the signs and appearance are similar and it becomes impossible to differentiate, although the history however may be of much value to help to decide the diagnosis.

Location: For practical clinical purposes, one may classify lesions in the upper and lower intestinal tract, and those in the vicinity of the ileocecal valve; lesions however may occur at any intermediate point.

Upper Intestinal Tract: Perforated gastric ulcer, ulcerating gall bladder and pancreatic lesions are the most frequently associated with this condition. More rarely still, an ulcerating carcinoma will perforate into the jejunum forming a natural gastroenterostomy, such as occurred in one of my cases and which was reported in the American Journal of Roentgenology, November, 1927. Tumors of the abdomen, ulcerating lesions of the small intestines and colon also play their part as etiological factors. Pathology in the vicinity of the gall bladder, pancreas, and omentum also must be included as predisposing factors. Occasionally a gall stone will produce an ulcerating lesion and in the process of repair, a cicatrizing mass will be developed, producing deformity or stenosis either in the pylorus, duodenum, or both. To me it is astounding that duodenal ulcers, the most common of all lesions, rarely produce a cicatricial enteritis.

In the region of the ileocecal valve, ulcer of the intestine is probably the most common preexisting lesion. Occasionally a tumor in the terminal ileum or cecum may cause obstruction or ulceration and even produce a fistulous tract, eventually forming a pathological anastomosis. One must keep in mind malignancy, tuberculosis of the cecum, neoplasm, either intra-lumenal or extra-intestinal, Hodgkin's disease, the leukemias, and syphilis. Just what the duration of the inflammatory stage is, offers difficulty in the greater number of cases, as the cicatrizing lesion produces symptoms when the process is far advanced. Intestinal parasites may sometimes simulate a cicatrizing mass or produce one, if the ulceration has been persistent and over a long period of time. Complications of appendicitis only have to be mentioned to be considered as a possible etiological factor.

In the lower intestinal tract, neoplasm ulcerating into the lumen of the bowel always is a condition worthy of consideration since one has to establish whether or not the inflammatory mass is malignant. Adhesions resulting from any cause, whether infection or trauma, invariably give us difficulty. Again the court of last resort may be the microscope. Polypi of the colon or ileum and diverticuli sometimes may give rise to the formation of an inflammatory mass once infection

begins, but these conditions as a rule do not afford great difficulties for recognition. To summarize, a careful history is of inestimable value to the clinician and equally intensive should be the roentgenological study, especially at the period of time suggested by the history and the location of the mass.

Dr. B. C. Cushway, Chicago: I think the subject has been pretty well covered. I wish to thank the discussors for their interesting discussion. I might stress, perhaps, the importance of the serial studies as brought up by Dr. Arens, and, of course, the importance of the history, and the rather typical sequence of the history and clinical findings.

The condition is most typical and probably will be easier to recognize roentgenologically when located in the lower right quadrant involving the terminal ileum and perhaps the ileocecal valve. This condition should be suspected after appendectomy where there is a persistent fistula.

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## PHYSIOLOGICAL EFFECTS OF VITAMIN DEFICIENCIES AS SUMMARIZED BRIEFLY FROM RECENT AND AUTHENTICATED RESEARCH EXPERIMENTS

MILDRED ONCKEN, M. S.

CHICAGO

In the vitamin field, intensified research activity yields startling revelations and extraordinary progress. Some idea of the import of this statement may be had from the fact that during the last year alone the literary codex of this newly unfolded phase of chemistry has been augmented by more than 1,000 authenticated, scientific articles, or something like three contributions per diem. In the aggregate, the message of this documentary mass is both momentous and marvelous; even though a large part of this continually appearing literature treats merely of purely confirmatory work, the actual and vital function of which is to support and to strengthen results really previously well-established.

Salient among these corroborative findings is the increasing accumulation of *determinations of vitamin distribution in numerous classes of foodstuffs.*

Anything like an equitable compendium of the current vitamin exploration area, and scope of achievement is scarcely compatible within the limits of this necessarily brief syllabus of progress.

Abridging the situation as fairly as possible however, attention is called to these seemingly indisputable and well verified facts:

*Vitamin D,* "the antirachitic vitamin." Now, some emphasis is laid on the addition of Vitamin D to the milk supply. This may be done either by direct irradiation of the milk, or by the more certain method of adding definite biologically assayed quantities of synthetic Vitamin D or Vitamin D concentrates secured from natural sources, mainly, cod liver oil. Such practice is increasing at a very rapid rate. Further it extends to foodstuffs other than milk and in rich variety.

*Vitamin E,* "the Sex Vitamin." Not to the ant, but to the bee have the chemists gone for light upon this substance. From the "royal jelly," through consumption of which the class of bee known as a "worker" becomes a "queen bee" proved first aid to the research worker.

Now Hill and Burdett proposed the romantic suggestion that this *peculiar and significant property of "royal jelly" is due to its high Vitamin E content.*

*The positive identification of Vitamin E in "royal jelly" has been confirmed.*

Further, concentrated and concrete research that though incomplete, is well under way, suggests emphatically, that to this sex Vitamin, this powerful Vitamin E, belongs another potent clinical role, *that of predetermining sex.*

Experiments with rats show that the mother rats give birth to litters in which the predominance of either males or females bears direct ratio to the sparse or the overabundant supply of Vitamin E to the parent throughout the period of gestation. Apparently hypo-vitaminosis or a sparse supply in the case of Vitamin E tends to produce male offspring, just as hyper-vitaminosis or an overabundant supply in the case of Vitamin E tends to produce female offspring.

The now familiar report of Vogt-Moller in the *London Lancet* of the cases of two women, each of whom after four or five consecutive miscarriages were treated with Vitamin E, and subsequently each produced a live child, has been followed by a rich accumulation of authoritative evidence attesting action of this nature by Vitamin E upon human beings.

Certainly a vitamin demanded imperatively for the control of sex and sex functions in so many lower animals, as is Vitamin E, must play a definite counterpart in the human economy.

*As to the offspring themselves, the young from Vitamin E surfeited mothers are more intelligent*

*and keen than are those from mothers deprived of Vitamin E to the point where the young are just born.* In this respect, Vitamin E exerts an action rivaling that of Vitamin B.

Vitamins E, Vitamins B (and G) hold rich reward for research. Of interest and import are summarized reports of the ability shown by rats to learn the way through a series of complex passages and blind alleys—the so-called "maze" for laboratory tests.

Elaborate preparations were made for these experiments. To begin with: 1. Wheat germ from which the oil was completely extracted was found by test to be free from Vitamin E but rich in Vitamin B (and G):

2. Contrariwise, the oil extracted from the germ was found to be free from any appreciably detectable quantity of Vitamin B (and G) but rich in Vitamin E.

Hence extracted wheat germ served as the source of Vitamin B in the tests; while extracted wheat germ oil served as the source of Vitamin E.

Accurate determination was made of the minimum amounts of each of these Vitamins demanded by the pregnant rats in order to insure the birth of the young and in the case of Vitamin B to extend this insurance to the point of preventing maternal abandonment or destruction of the litter.

Then division into five groups was made of the pregnant rats under test. Group I received the minimum allowable amount of Vitamin B; Group II, the minimum allowable amount of Vitamin E; Group III, a liberal amount of Vitamin B; Group IV, a liberal amount of Vitamin E; Group V, the standard "normal diet."

Once the young were born, the respective mothers were transferred from groups I, II, III and IV to the same "normal diet" as had been furnished the animals in Group V, who continued on this diet after the birth of their litters as they had done previously. All the young were weaned after approximately 28 days. Up until they were 70 days old all the litters received a standard normal stock ration. Then the "learning trials" were conducted. The incentive to learn was hunger. Reward for learning was the finding of food. In the table of results herewith presented measurements made included the 1. number of trials necessary to learn the way through the maze; 2. number of errors; 3. number of retracings of route; 4. time spent going through the maze without error.

TABLE I

Measurements of learning ability (maze test) of rats born from Vitamin B and E depleted, and from Vitamin B and E surfeited mothers *during the gestation period, only.*

| Group | Treatment | Pups | Trials | Errors | Retracings | Seconds |
|---|---|---|---|---|---|---|
| I | B depleted ... | 38 | 72 | 186 | 50 | 3459 |
| II | E depleted ... | 42 | 79 | 198 | 53 | 3720 |
| III | B surfeited .. | 44 | 53 | 121 | 34 | 1916 |
| IV | E surfeited .. | 39 | 49 | 118 | 32 | 1873 |
| V | Normal ..... | 45 | 56 | 123 | 36 | 2087 |

From this it can be observed readily that the effects are similar upon the young when, during gestation their mothers have suffiered from Vitamin B or Vitamin E depletion; further that these effects are both more lasting and somewhat more pronounced in the case of E depletion than in the case of B depletion.

*Pups reared from mothers who had received abundant Vitamin E during pregnancy showed the greatest intelligence and keenness.*

Now Vitamin B has more to do with appetite urge than it does with sex urge, and Vitamin E has more to do with sex urge than with appetite urge. This table would prove that a somewhat greater impairment of the "learning" faculty results in the young when the mother is sex-starved rather than appetite-starved in her Vitamin ration.

As to infants, at this writing, practically nothing is known as to their requirements of either Vitamin B or Vitamin E. It has been established however that in both these Vitamins that *milk is relatively poor.*

For the normal functioning of the brain and of the nervous system, Vitamin B is recognized as necessary. Probably Vitamin E is no less important. A matter for pediatricians to consider and to determine is whether the fortification of milk with Vitamins B and E would be advantageous. It seems clear that undoubtedly the obstetricians *by supplying liberally Vitamin E to expectant mothers* have a fertile prenatal opportunity to enhance profoundly the anticipated child's susceptibility to "learning," or in other words, to assist in laying the foundation of *"mens sano in corpore sano."*

Surely it is as important that a child shall be born with an endowment that will provide for a vigorous mentality as that he shall possess assurance of a sound skeletal development, such as can be furnished by Vitamin D!

From the first, Vitamin E has provoked some question as to the probability of the dual nature of this vitamin, with one factor having anti-sterility potencies, and the other serving as a galactagogue. The first to point out that a failure of lactation attended Vitamin E deprivation in rats were—coincident and separately—Sure and Tso. Very recently a galactagogue action in the human is credited clinically to wheat germ oil in which Vitamin B was entirely absent and Vitamin E abundantly present.

While Vitamin A seeks out particularly the visceral tissues in which to accumulate, it is the musculature and the fat that is sought selectively by Vitamin E. Some reports are appearing relative to the correction of a spastic and partial paralysis of the muscles of the lower limbs in consequence of Vitamin E therapy. This instance is an exact duplicate of the early phenomenon observed by Evans and Burr in the case of rats. Thes investigators found a very intimate correlation between muscle weakness and steriliy, and the cure of both by administering wheat germ oil. Other dietetic deficiencies, such as lack of calcium, or of idodine, or too high protein, or want of Vitamins A, B, C or D, were ineffective both in preventing or in curing the paralysis.

Thus in the Vitamin E pre-deficiency syndrome, may appear a muscular paralysis for which the specific treatment necessitates the use of Vitamin E. Clinical prevalence of "E-I'aralysis" is under extensive investigation. Mild forms of this affliction seems rather commonly prevalent.

In the ordinary metabolic as well as in the reproductive processes of the body, Vitamin E is valuable. Originally the studies having to do with the reproductive functions involved the use of rats. Females fed on a diet free from Vitamin E, but not allowed to reproduce, were just as infertile at the end of a certain period as were those rats which on the same rations had one or two successful gestations.

Before sterility due to lack of Vitamin E is established, then, there is a pre-deficiency period when certain symptoms may be manifested. These symptoms include impaired mentality, impaired metabolism, and weakened musculature, and are of types for which, most probably and apparently, only Vitamin E can be beneficial.

Long labor—tedious, patient, painstaking and most impartial—is required and is tremendously much desired in the direction of identifying the pre-deficiency syndrome attending the lack of all the vitamins. As it is, discoveries of import have been made in regard to avitaminosis of each vitamin. In avitaminosis of Vitamin A, Mouriquant, Rollet and Croix have described a pre-deficiency state, discernible as an ulceration of the cornea, microscopically visible some twenty days before the onset of clinically recognizable symptoms of xerophthalmia. Avitaminosis of Vitamin B may be presaged by anorexia. Prognostic of avitaminosis of Vitamin G may be clouding of the cornea, or a beginning cataract. As to the pre-deficiency of avitaminosis of Vitamin E, there may appear the dulling mentality and muscular weakness portending the onset of sterility.

Vitamin therapy will become more generally useful, in fact will arrive at its rightful, registered position, with better clinical identification and recognition of pre-deficiency syndromes. This is a field as much for the general practitioner as for the specialist.

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## ALLERGIC DISEASES IN CHILDHOOD

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Allergy in man is a condition of specific hypersensitiveness. Allergic persons, therefore, may develop a response in certain organs to specific stimulation that is impossible in the non-allergic individual. Many tissues may be involved, the skin, conjunctiva, nasal mucosa, bronchi, gastro-intestinal mucosa, perhaps bladder and central nervous system including retina and meninges having been reported.

Allergic diseases cover five main forms according to Coca:[1]

I. *Atopic Illnesses* (human hypersensitiveness not occurring in lower animals and subject to heredity influences).

1. Asthma, and
2. Hay fever. To these may be added
3. Eczema
4. Urticaria
5. Angio-neurotic edema, and in some cases
6. Gastro-intestinal disturbances

Read before Section on Medicine, at annual meeting of Illinois Medical Society, Springfield, May 15, 1934.

7. Migraine
8. Hematuria
9. Henoch's purpura, and certain
10. Types of mucous colitis.

The first three are of interest in pediatrics, and the fourth, fifth and sixth to a less extent.

II. Serum disease and drug hypersensitiveness.

III. Hypersensitiveness of infection-tuberculin.

IV. Contact dermatitis including dermatitis venenata.

V. Anaphylaxis: this should be set apart, as it has never been demonstrated in the human.[2]

Matthew Walzer[3] discusses the manifestations of *atopy*, as without a pathognomic symptomatology. How then can we recognize atopy, or the allergic individual? This depends on the coincidence of some of these characteristics:

1. Manifestations in form of asthma, hay fever, etc.
2. Frequent occurrence of related conditions, eczema, urticaria, etc.
3. Hereditary character, including age of onset.
4. Tendency to develop hypersensitiveness.
5. Transient localized edema in most forms.
6. Eosinophilic tendency.
7. Choice of lining surfaces skin, mucosa, endothelium.
8. No pathognomonic tissue changes in pure atopic illnesses.
9. Tendency toward chronicity in most atopic illnesses.
10. Benign character as to mortality.

Then with this brief discussion of allergy and the atopic, or allergic, hypersensitive state, let us proceed to a limited discussion of

## ASTHMA

*Historical:* Hippocrates used it as a word for dyspnea. Van Helmont three hundred years ago first wrote of its spasmodic character; Willis[4] emphasized its convulsive character. Meltzer[5] in 1910 described asthma as an anaphylactic hypersensitiveness in man. Coca and others have admitted its hypersensitive character but not as a form of anaphylaxis.

*Definition:* Asthma is that form of atopic illness which shows as recurrent attacks of paroxysmal dyspnea, especially in the expiratory phase.

*Prognosis:* Mortality figures have been given by Hoffman[6] at 21% in excess of expected insurance tables, but figures often are not reliable because many cardiac and other cases may be included as true asthmas, which they are not.

"Once asthmatic, always potential asthmatic rest of life"; however, in children, asthma, especially that caused by foods, may recover spontaneously.

*Prospects for health:* 50 to 75% excellent; 12 to 20% cannot be helped. This is probably a fair average of statistics, remembering that many asthmatics are seen after such complications as emphysema, chronic bronchitis or bronchiectasis have appeared.

*Treatment of asthma: During the attack:* Rest in bed, catharsis, reduce diet, hygienic care. Medicinal: Epinephrin, hypodermically, in three to eight minim doses, given *early* and repeated as needed is probably most reliable. Ephedrine, orally or by hypodermic administration, will carry some cases along. Atropine, aspirin and pituitrin, iodides, calcium, etc., have their advocates. Morphine is mentioned merely to be condemned, in treating children.

*During the interval* between attacks the most important therapy is: *Specific:*

1. Avoid contact with the offending excitant, or
2. Attempt desensitization.

It is unnecessary to comment upon the advisability of a thorough physical examination, and the elimination of any foci of infection.

Pollen filters may benefit some patients.

Two cases illustrate apparent recovery from asthma, one by elimination of the specific excitant, and the other by "outgrowing" the condition (desensitized by nature).

Case 1. C. J. H., aged 9 years. Had had asthma since six months of age. He suffered during the entire year, was taken to distant points in an attempt to evade the excitant. Skin tests were unavailing until cinnamon elicited a marked reaction. This was in 1924, and he has been free the past ten years.

Case 2. S. S., aged 5 years, from a markedly allergic family, would collapse from picking up a cat, and wheeze for a long time. Her skin failed to react to cat hair or dander, repeatedly. By avoiding contact over the years, she has apparently developed an immunity so that she has had no asthma for over six years, and can be in moderate contact with cats; that is, in the same room for a short period, although she will not handle them.

HAY FEVER

*Historical:* Leonard Botallus[7] in 1565 described rose fever.

John Bostock[8] in 1819 accurately described the condition, as to symptoms, so that little has been added since.

Charles Blackley[9] described skin testing on himself in 1865, and published monumental researches.

Dunbar in 1903 developed pollantin, a serum, made by injecting horses with increasing doses of pollen.

W. Weichardt[10] developed graminol from herbiverous animals who were supposed to develop their own antitoxin as a result of eating blooming grasses. Either pollantin or graminol were the preferred treatment for over ten years.

Noon[11] in 1911 reported results from active immunization with subcutaneous injections of pollen extracts, and first put hay fever therapy on a sound scientific foundation.

In passing, it is interesting to quote Dr. Oliver Wendell Holmes' reply to Henry Ward Beecher's request, in 1868, for a hay fever remedy: "Gravel is an effectual remedy. It should be taken about eight feet deep."

*Treatment of hay fever.* General measures as with asthma.

*Palliative:* Ephedrine. Two or three grains to the ounce of water for the eyes; or a one to three per cent. solution as a nasal spray is probably as satisfactory as any. The large number of therapeutic agents available bear mute testimony to the failure of all to give more than temporary relief.

*Specific:*

1. Avoid excitant.
2. Desensitize in the manner best suited to your patient and yourself, whether it be perennial treatment (year-round), pre-seasonal, or co-seasonal.

An illustration of typical response to hay fever tests is afforded by

*Case 3. C. B. had had severe hay fever for eight years. He tested four plus to giant and common ragweed, and two plus to goldenrod. (Goldenrod pollen is heavy, sticky, small in amount, and insect-distributed; not wind-pollinated: so it is not so important.) Pre-seasonal injections of pollen have kept him comfortable for five years.*

SKIN TESTING

*Historical:* Kirkman is given credit for making the first test for hypersensitiveness in 1835 by inducing hay fever by sniffing pollen from his hand. However, Blackley in the article previously referred to, probably made the first scientific *skin tests* in 1865.

In 1909 Smith[12] reported some interesting dermal scratch tests. A pediatrician, Schloss[13] is generally given credit for the establishment of skin testing as a scientific diagnostic aid. He used the methods introduced by Von Pirquet in 1907 for tuberculin testing.

*Skin testing is the most valuable diagnostic procedure in hay fever and asthma.* Properly done, with potent antigens, properly selected, strong enough, in a skin which is capable of responding satisfactorily, positive results do not always mean that our trouble is solved, but they are to be interpreted clinically, and if the clinical picture fits, these tests will direct our efforts to success in many cases.

*Excitants or Atopens:* The classification used is not important. The one used here has been called the five "ants." It is from Bowman and Walzer.

*Ingestants:*

A. Cereals
   Wheat—Rice—Oats—Buckwheat
   Corn—Rye—Barley
B. Egg
C. Cows Milk
D. Fish and shell food
E. Meats
F. Nuts
G. Vegetables
H. Fruits
I. Spices
J. Chocolate-Cocoa
K. Honey
L. Beverages
M. Medicinal and Chemical agents.

*Inhalants:*

A. Pollens
B. Animal Danders

| | | | |
|---|---|---|---|
| Horse | Rabbit | Hog | Chamois |
| Cat | Wool | Camel | Monkey |
| Dog | Feathers | Mouse | Sundry |
| Goat | Cow | Guinea Pig | |

C. House dust
D. Seeds—Cottonseed—Flaxseed—Kapok seed
E. Miscellaneous

| | |
|---|---|
| Orris root | Castor Bean |
| Glue | Coffee Bean |
| Tobacco | Insect Atopens and Excitants |
| Pyrethrum | Mites, Fungi, Molds |
| | Various Botanical Excitants |

*Contactants:*

A. Silk Worm
B. Cosmetics and Perfumes

C. Poison Ivy and Primula
D. Miscellaneous

*Injectants:*

A. Animal Sera
B. Drugs and Medicinal Agents
C. Insect bites
D. Miscellaneous

*Miscellaneous Excitants:*

A. Parasites
B. Physical agents
C. Bacteria and their products

It must be remembered that skin tests alone are often unsatisfactory in giving false negative tests. One need only to read Rowe's[14] splendid treatise "Food Allergy" to see results that can be accomplished by his "Elimination Diets" in the presence of negative tests or without skin testing. Rowe emphasizes the tendency for a *food allergy* to change from one manifestation into another; as a patient with infantile eczema clearing spontaneously; becoming asthmatic at two or three years of age, after the eczema disappears; the asthma being outgrown at eight or ten years, but a gastro-intestinal allergy appearing in the teens; or possibly a migraine.

The *cyclic* nature of food allergy, with its *recurrent* attacks of vomiting, acidosis, etc., have been frequently emphasized.

*Eczema:* Should infantile eczema be approached from the allergic point of view? Most eczemas will disappear without specific or allergic investigation, if given a little time, plus your favorite method of treatment, be it mechanical restraint, ointments, internal medication, or what not. A *small percentage* persist and these should certainly be investigated, although many will be cleared up before the allergic tests have proved their etiology, clinically.

Two interesting eczemas illustrating marked specificity follow:

Case 4. J. T. developed eczema after eighteen months. Ordinary therapy not being satisfactory she was tested and found four plus to almonds. Nuts are notorious for giving misleading reactions, but in this case removal of all possible contact cleared the eczema without other treatment. A year later a terrific reaction followed the use of a cold cream made up with some almond oil in it. During the past three years she has been O. K.

Case 5. S. B. aged 3 years, had had eczema for the past two years. A marked reaction to Le Page's glue revealed that the child had a favorite pastime of chewing the bindings from magazines, etc. He has been free from eczema in the four years since this was stopped.

*Urticaria:* This condition is undoubtedly allergic in many cases but is often hard to hook-up to specific atopens.

Case 6. R. M. aged 12 years, had had urticaria for three years. Although it was intermittent, she was never without it over a day or two. Fifteen or twenty skin tests had been done but she had not been tested thoroughly. The urticaria disappeared following a severe case of measles with hyperpyrexia.

*Angio-neurotic edema* is usually more of a clinical curiosity but occasionally is an alarming condition as in the following illustration:

Case 7. F. W. L., aged eight months, had had a mild eczema for six or seven months. He suddenly developed a swelling of one ear and adjacent tissue. By the time he could be brought to the office, a distance of about thirty miles, the face was normal. As he left the office the face started to swell and a close inspection of the lower lip in the two illustrations, taken about

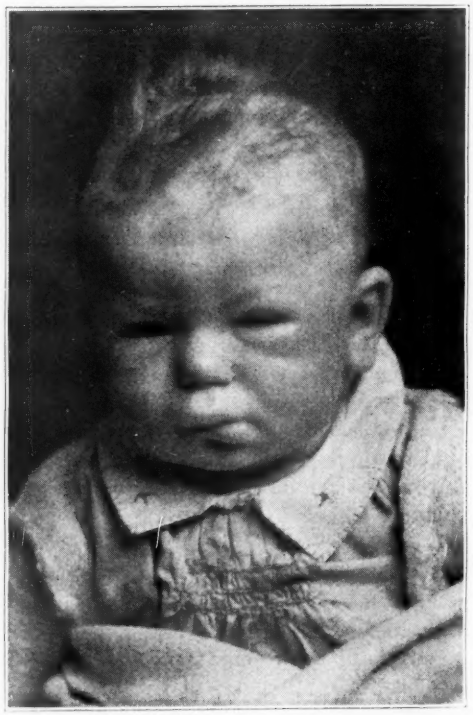

Fig. 1. Case 7: Angioneurotic edema. Note swelling of face, especially lower lip to compare with Fig. 2.

thirty seconds apart, showed the speed with which the edema developed. He was sent to the hospital for observation. A few days later his temperature at six P. M. was normal. His mother left the hospital for home a few minutes later; at six forty five P. M. the temperature was 108 degrees F. and the baby appeared unconscious and moribund. Adrenalin and atropine in addition to antipyretics and hydrotherapy brought the temperature down to 101 degrees in an hour, and it

remained under 100 degrees after another hour. A day or two later an enormous distention of the upper abdomen, with the siphoning off of a quart or more of fluid giving a positive chemical test for blood, and showing a few blood cells under the microscope, gave evidence of an angio-neurotic edema of the upper bowel. Since then the eczema has been the only allergy, and now after two more years he is quite clear. Looking back,

Fig. 2. Case 7: Angio-neurotic edema. Photograph taken 30 seconds after Fig. 1. Note rapidity of Edema across Lower lip.

his improvement has been due largely to avoidance of *orange,* to which he was *not* skin sensitive and *peas,* to which he was three plus. Egg, which was three plus, and wheat, which was doubtful, were mildly involved. Ragweed, three plus, and horse dander, four plus, have as yet not been active offenders in his allergic life.

So much misinformation and skepticism is in the minds of many doctors and lay people that the following report carries a lesson for us.

Case 8. J. L. aged 7 years, had had asthma of a severe type since infancy. His attacks were so severe, and so frequent throughout the year that his development was markedly retarded. A physician had told the family that skin tests "were all negative." If this report had been accepted as final the child might still be in the same shape. However, the original tests must have been improperly done, or deteriorated antigens used, or the skin was not sensitive when the test was done, because new tests showed many positives, and so marked that they were checked with conjunctival tests. Incidentally this patient showed a marked response to *physical stimuli,* to which Duke has called our attention, going into a typical attack of asthma when rubbed with ice. The lesson from this should teach us to be as thorough as possible in allergic work and not to condemn it as worthless because of some failures, whether they are real, or only apparent failures as in the above case, at first.

Some allergists are too enthusiastic. They can cure anything. Many of us are too skeptical—believing allergy has little of value. Feinberg[15] has nicely shown that the proper approach is midway between these extremes, and I commend you to a patient, receptive attitude in your allergic studies, on that basis.

321 West State Street.

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## DISCUSSION

Dr. Leon Unger (Chicago): I was very much interested in Dr. Crawford's paper and I think he has covered the subject of allergy very well for the brief time he had.

There were some points in his paper that might be stressed a little. The point he made about the prognosis of asthma being 21 per cent greater than the average person for the same age is perhaps a little doubtful. The insurance statistics from which this prognosis was evidently taken came out from the Metropolitan Life Insurance Co. just recently, and in that paper the diagnosis was asthma, and it did not give any statistics as to just how they arrived at the diagnosis or whether those patients really had an allergic workup with a sound allergic treatment.

I do not believe the mortality of asthmatics is 21 per cent greater than the average mortality, provided the patient is well taken care of. I think you get the

best results in the department of pediatrics where you can begin to work on your patients while young. In such group the mortality should be no greater than in an average person.

There are two main complications of bronchial asthma, emphysema and chronic bronchitis. Those two come on rather early in life if the child is allowed to have attacks of asthma. The lung balloons out, the child becomes emphysematous, the chest deformed and we cannot clear up the emphysema.

There is one point he has not stressed, that is the preventive treatment, especially of bronchial asthma which happens to be the most important of all the allergic conditions.

I think if we consider that the children of allergic individuals are potential allergics and will take care of them from that point of view, we will arrive at very good results in that group of cases.

Every child that has a parent or parents who are themselves allergic, should be considered as very liable to develop asthma and hay fever. And in such children it is a wise precaution to treat them or handle them on such a proposition as this: if you consider that eggs, wheat and milk and other foods are the main causes of their eczema, then watch the diets of these children from the day they are born. After they are through with a period of breast feeding put them on cow's milk. See how they get along on that. Then when you start adding foods later on, add one food at a time—add orange juice, then egg, etc. Add each new food at two weeks' intervals. If eczema, or hives or asthma develop, you will be able to check your cases very well.

These children should be shielded from the more common causes of bronchial asthma such as feathers and animals. Children of allergic parents should not be allowed to sleep on feather pillows, to have dogs or cats or go horseback riding, unless you are sure that those things do not cause any trouble.

Furthermore, they should not be overexposed at one time to pollen. They should not—for instance, city children—be sent to camps during the hay fever season unless skin tests to pollens are done and are found negative. Children in Chicago are very often sent out to a camp during the pollinating season, and the susceptible ones develop hay fever, just as soon as they get to camp.

Dr. I. Harrison Tumpeer (Chicago): Time will not allow the discussion on Dr. Crawford's excellent paper which I had prepared. However, I am awfully glad for the opportunity to follow an internist and comment on his discussion from the pediatrician's viewpoint.

Allergists are mostly migrated internists, but allergy is fundamentally pediatric. In the first place, the history of allergy begins in pediatrics. The older pediatricians described a group of disorders under the name of diatheses. It does not take much study to discover that the diatheses of the older pediatricians is the allergy of today. I have brought this out in a rather detailed study recently. Furthermore, Von Pirquet, gave the name to allergy. The same Von Pirquet gave the scratch test, and Schick brought popularity to the intradermal test. Furthermore, the unfolding of the various signs and symptoms of allergy is most clearly seen through childhood and puberty. Only the pediatrician has access to this group. The internist-allergist sees the child only for a fully developed allergic condition like hay fever or asthma.

The internist-allergist bravely discusses children's allergy. He sees it only with the internist's eyes. He speaks of testing and indicting all of the children in allergic families. He advises starting egg yolk first and orange juice next. He never worries about illness in allergic children. He has not heard of the eczema deaths which the old pediatricians described. I would like to warn him to look out for the children with allergy because they are apt to react outrageously to disease and because they may do what Dr. Crawford's patient did—namely, develop a severe eruption and run a temperature of 108 degrees.

The internist-allergist's viewpoints concerning pediatric aspects that we have heard are distorted. For instance, he speaks gravely about the low mortality rate in children with asthma. No internist knows that because he has not the running contact with a large group of children along the years. The idea of the low morbidity rate among allergic children has been handed down from a paper written by an allergist who is not a pediatrician. In a preliminary survey of a group of thirty-eight babies with allergic symptoms, I found eight deaths among these children and their brothers and sisters. It is a characteristic manifestation of this group that when they do have illness, they react outrageously to infection. As far as the dietary advice that we have been offered, manipulations of the diet are fundamental and elementary to every pediatrician. We do not give eggs before orange juice and it is not practicable to add one food at a time, as Dr. Unger suggested, even in a known allergic family. Furthermore the suggested two-week period of food trial is not the answer. In certain people a food taken daily may produce its effects only once a month.

We must be practical. We start with cow's milk, and add other foods as necessary. It seems far-fetched to test every child in an allergic family on the possibility that the child might be allergic. After all, not every child of allergic parents will develop allergy. The idea of the family survey is rather amusing. Apparently, Dr. Unger is not satisfied with the variety of clinical pictures which allergy has already claimed as its own. Now he wants to get all the children coming to his office. The pediatrician knows this field. The internist betrays his inexperience.

The internists are doing the best they can with allergy, but they must not forget that their understanding of allergic diseases is based on their experience with clinical medicine. Let them hesitate, lest they involve themselves in clinical pediatrics when they discuss children's allergy.

Allergy arises from pediatrics. Allergy will learn from pediatrics.

# DARKFIELD DIAGNOSIS OF INFECTIOUS SYPHILIS

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It is very generally agreed that syphilis is more amenable to treatment if the treatment is begun early in the disease. Quantitative estimation of the superior results of early treatment appears in the studies of Moore and Kemp.[1] They say "Grouping together cooperative and uncooperative patients, without regard to the character or duration of treatment, it is shown that if treatment can be begun within the first two weeks of the infection (sero-negative primary syphilis), the chance of ultimate cure is almost twice as great as when it is delayed until the appearance of secondary manifestations. In particular, the incidence of reinfection in the groups of sero-negative and sero-positive primary and early secondary syphilis is 11.9, 8.1, and 3.0 per cent respectively. The extreme importance of early and accurate diagnosis is thus emphasized."

EARLY SYPHILIS

| Stage | Number of Patients | Reinfections | Average Duration of Chancre |
|---|---|---|---|
| Sero-negative primary..... | 42 | 11.9% | 14 days |
| Sero-positive primary..... | 61 | 8.1% | 10–50 days |
| Early secondary..... | 299 | 3.0% | 96 days |

Table 1

(From Moore & Kemp, Johns Hopkins Hospital, 1926)

The reinfection rate is taken as the best index of complete cures in the particular groups. The foregoing opinions were based on a total of 402 patients selected from a much larger group—the only basis for selecting these cases was the fact that records and follow-ups were complete in these cases. To summarize in another way, the same authors say, "With the utmost cooperation on the part of the patient, and painstaking treatment and follow-ups on the part of the physician, it appears possible to cure 100% of patients with sero-negative primary syphilis, but only 80 to 95% of those with sero-positive primary or early secondary syphilis. The refractory 5 to 20% seem likely, in spite of the utmost efforts of therapy, to develop late syphilis, especially neurosyphilis."

Read before the Section on Public Health and Hygiene of the Illinois State Medical Society at the Eighty-fourth Annual Meeting in Springfield, Illinois, May 16, 1934.

From the above study, and from numerous others, the extreme importance of early accurate diagnosis is apparent. To accomplish the differential diagnosis of the primary lesion of syphilis, one has a choice of two different methods—namely, the demonstration of Treponema pallida itself in the lesion, or the demonstration of complement-fixing antibodies in fluid taken from the lesion. The latter test, with serum from the chancre, is positive sooner than the blood but this test is not very practicable. It is necessary to collect a measurable amount of clear serum from the lesion and to protect this small quantity of fluid from drying until the test can be performed. The alternative method, that of demonstrating the causative organisms in material from the lesion, may be approached from several angles. These tests require less fluid and are more readily accomplished. The well-known India ink procedure, in which the serum from the suspected chancre is mixed with a small amount of ink on a glass slide and then spread in a thin film, is simple enough but requires a considerable amount of skill and experience. Ordinary smears may also be made and dried in the air; these can then be stained with any of the special stains recommended for Treponema pallida. There have been approximately 200 different stains proposed for this organism.

The most efficient method of examining chancre fluid is by the darkfield test—this has been the experience of almost everybody who has studied the question. McNabb, Matthews, and McClure[2] have reported a small series of comparative tests which shows the superiority of the darkfield test over other methods of diagnosis in early syphilis.

| | No. Examined | Positive | | Negative | |
|---|---|---|---|---|---|
| | | No. | Per Cent. | No. | Per Cent. |
| Darkfield ..... | 77 | 56 | 72.7 | 21 | 27.3 |
| Smears ..... | 49 | 29 | 59.2 | 20 | 40.8 |
| Presumptive Kahn.... | 73 | 47 | 64.4 | 26 | 35.6 |
| Hinton ..... | 62 | 40 | 64.5 | 22 | 35.5 |
| Sensitive Kahn..... | 71 | 41 | 57.7 | 30 | 42.3 |
| Wassermann ..... | 43 | 21 | 48.8 | 22 | 51.2 |
| Diagnostic Kline..... | 29 | 18 | 62.1 | 11 | 37.9 |

Table 2

(From McNabb, Matthews, and McClure, Canad. P. H. Jour., 1933, 24, 405.)

It is seen in their table that the darkfield test gave the highest percentage of positive results. The Hinton and presumptive Kahn tests ranked next in revealing cases of early syphilis. Also in this connection, an interesting study by Owen and Cope[3] may be cited in which they showed

the comparative efficiency of serological and darkfield tests in primary syphilis. These investigators studied 1061 proved cases of primary syphilis by darkfield, Kahn, and Kolmer Wassermann tests. Their results appeared in the form of a tabulation; I have represented them graphically in Figure 1. It is immediately apparent from inspection of this graph that serological tests do not equal the darkfield test in efficiency until the third week of the disease.

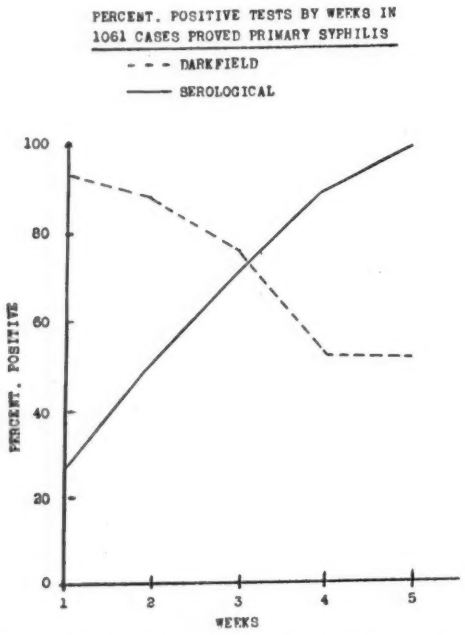


Fig. 1. (Taken from Owen and Cope, J. Lab. & Clin. Med., 15: 579-583, 1929.)

From the findings of Moore and Kemp,[1] previously cited, the chance of curing the average run of patients is almost twice as great when treatment is begun in the first two weeks of infection, as compared with treatment delayed until serological tests become positive or secondary manifestations appear.

The darkfield test, besides being very useful in the sero-negative stage of syphilis, still gives indisputable diagnostic evidence in a large percentage of cases after late secondary signs have appeared in the patient. This has been demonstrated in a cooperative study[4] by the Mayo Clinic, Johns Hopkins, Pennsylvania, Michigan, and Western Reserve Universities, and the Venereal Disease Division of the United States Public Health Service. The percentage of positive darkfield tests, shown in Table 3, was highest in the sero-negative primary stage (94.4%), and fell to an average of about 75% in the sero-positive primary and secondary stages.

RESULTS OF DARKFIELD EXAMINATIONS FOR PATIENTS ADMITTED WITH EACH STAGE OF EARLY SYPHILIS

| | | Darkfield Examinations | | | |
|---|---|---|---|---|---|
| | | Positive | | Negative | |
| Stage | Total | No. | Per Cent. | No. | Per Cent. |
| Sero-negative primary | 162 | 153 | 94.4 | 9 | 5.6 |
| Sero-positive primary | 179 | 130 | 72.6 | 49 | 27.4 |
| Early secondary | 226 | 179 | 79.2 | 47 | 20.2 |
| Late secondary | 11 | 8 | 72.7 | 3 | 27.3 |
| Total | 578 | 470 | 81.3 | 108 | 18.7 |

TABLE 3

(Cooperative study—Reported in Ven. Dis. Inform., 1932, 13, 175.)

Undoubtedly the best conditions for the darkfield examination of lesions suspected of being syphilitic are those in which the patient goes to a laboratory or special venereal clinic and remains until satisfactory test material has been examined. The material is freshly collected by an experienced worker and the patient is available if retests on more of the secretions are desired. There is, however, a large field for a test which would be available to physicians practicing in rural communities and in small towns where there are no laboratory facilities. Also patients unable to pay for the services of a venereal specialist and unwilling to go to free clinics and dispensaries would benefit by a test which could be collected in the doctor's office and mailed to a state or municipal laboratory. Such a service should be offered by public health organizations because the early diagnosis of syphilis is distinctly in the field of preventive medicine.

Mahoney and Bryant,[5] experimenting with material from rabbits and also from human lesions, found that recognizable treponema persisted in collected specimens for 4 to 5 days in most cases. They used straight capillary tubes, filling them by capillarity and sealing with a paraffin-vaseline mixture. A progressive decline in motility of the organisms was the usual finding in the collected material. Temperature of storage was an important factor, they found: tubes kept at higher temperatures became unsuitable or negative in darkfield tests sooner than those kept at lower temperatures. This was interpreted as being due to the effect of the bacterial over-growth which was more pronounced at the higher temperatures.

Our efforts have been directed towards the

development of a method which will permit of the collection of serum from chancres in such a manner as to afford optimum conditions for the survival of recognizable treponema. The method must be simple enough to be readily understood and the completed package must be such as to withstand rough handling in the mail. Postal laws and regulations also had to be taken into consideration.

An outfit which has been satisfactory in our hands, and which has been approved by the district supervisor of parcel post, consists of a one-piece stamped iron box, 6.5 x 2.5 x 1 cm. with a slip-cover to fit; paraffin-vaseline mixture, capillary tubes, identification card, and the usual screw top mailing tube. The capillary tubes are 5 cm. long and of about the same thickness and bore as the tubes in which smallpox lymph is ordinarily dispensed. Three of these capillaries are sent out in each outfit and they are placed in a small glass test tube with cork stopper for protection against breakage. The small iron boxes are half filled with the paraffin-vaseline mixture which is then allowed to harden. The percentage of paraffin is varied to suit the seasonal variation in temperature—approximately 10% paraffin is suitable for all but the hottest weather.

To fill the capillary tubes, the doctor secures an exudation of clear serum on the lesion and applies one end of the fine tube to the fluid. It is recommended that the tube be held in a horizontal position to assist the capillary flow, and it is also requested that more than one tube be filled as a safeguard against drying which happens occasionally. When the specimens have been taken into the tubes, the latter are placed on the surface of the grease in the box and gently pressed beneath the surface. This seals both ends of the capillaries and at the same time provides support and protection for them in transit.

To examine the specimens at the laboratory, the tubes are removed from the grease with forceps and the contents expelled by repeatedly pressing one end of the tube into a stiffer paraffin-vaseline mixture until the fluid is driven out of the other end of the capillary onto the darkfield slide. A point of practical value, in the laboratory at the time of preparing the slides, is to allow a small amount of the grease which adheres to the capillary to drop on the slide. This serves to anchor the cover-slip at the center and to prevent sudden currents in the preparation under the microscope.

Through the cooperation of two venereal clinics in Chicago, we have received known positive material from cases of primary syphilis. These specimens were sent by mail so that the effect of such handling would also enter into the trial of the method. Additional advantages in this arrangement were that the time of placing the specimens in the capillary tubes was known and also the approximate abundance or scarcity of treponema was in most cases indicated on the information card.

The results of these preliminary tests may be summarized briefly by tabulation Table 4.

ILLINOIS DEPARTMENT OF PUBLIC HEALTH

Results of Delayed Darkfield Tests

| Days* | No. | Pos. | Per Cent. |
|---|---|---|---|
| 1 | 57 | 56 | 98.2 |
| 2 | 42 | 35 | 83.3 |
| 3 | 14 | 12 | 85.7 |
| 5 | 1 | 1 | |
| 6 | 1 | 0 | |
| | 115 | 104 | |

(*Between mailing and receipt.)

Of the total of 115 examinations, 104 or 90% were found to be positive after 1 to 3 days from the time of collection. Two specimens were delayed in transit and were received 5 and 6 days after the material was collected. The first of these was still positive, but the 6 day old sample was negative. The specimens which dried out in transit did so because the capillary tubes were not forced below the surface of the paraffin-vaseline mixture.

A positive diagnosis in this series of tests was based on the presence of treponema of characteristic form. As reported by Mahoney and Bryant, it was noted in general that a progressive decline in motility took place. Motility was not, however, strictly correlated with the age of the specimens. Many of the one day old tubes contained organisms which were non-motile and occasionally actively motile forms were found in 2 and 3 day old specimens.

The presence of other spiral organisms was noted in many of these specimens, but they did not interfere with the survival of Treponema pallida in a recognizable form. Too many red blood cells in a dark field preparation render the examination difficult, but it is our impression that there was better preservation of motility and form in specimens which contained a few to a moderate number of red cells. Whether this

was accomplished through the production of a more favorable oxygen tension, or whether it was due to other causes is not known. In the routine use of this delayed dark field test, it should be especially emphasized that a negative result does not exclude syphilis in the patient. Retests are indicated on all negative results.

SUMMARY

1. An outfit is described which enables the doctor to collect and mail chancre fluid for dark field tests. This outfit is made available without cost to physicians of Illinois by the State Department of Public Health.

2. Controlled tests with known positive chancre fluid have yielded 90% positive results after an elapsed time of 1 to 3 days in the mail.

*Acknowledgments.* The writer wishes to acknowledge especially the cooperation of the Chicago Municipal Social Hygiene Division and the University of Chicago Skin Clinics. Credit is also due Mr. Heward Elmer, previously associated with this laboratory, for preliminary experiments.

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DISCUSSION

Dr. Andy Hall, Mt. Vernon, Illinois: I don't think that there is any subject that could be discussed before this State Medical Society that is of more importance to the physicians and to the public, from a public health and a public welfare standpoint, than the subject under discussion here this afternoon, the "Early Diagnosis of Syphilis."

Some two or three years ago, realizing the importance of the early diagnosis in syphilis, the personnel in the Public Health laboratory in Chicago was encouraged to undertake this study so that the diagnosis could be made by a dark field examination after the specimen was collected. I am pleased to know that this experiment has proven successful and that a way has been found whereby the man practicing in the rural communities, who isn't equipped with a laboratory and a technician to make these examinations, can collect specimens and send them to one of the State laboratories and get an early diagnosis.

Mr. McDaniels has just told us that with specimens collected and received twenty-four hours after mailing they are able to get positives in about 98 per cent; when collected, mailed and received three days after mailing, positives by the dark field method were found in something like 85 per cent of the specimens. There is not a physician living in any part of the State of Illinois but could, by using this method, collect his specimens and have them reach the laboratory within 36 hours after mailing.

It is a well known fact that the early treatment of syphilis secures the best results. You should read the recent article in the American Medical Journal of April 21 by Stokes, Cole, Moore, O'Leary and others. They reported 75,000 cases of syphilis. Three thousand two hundred and forty-four of these cases were followed for six months or more; 385 cases were followed for five years. And the best results, under the most intensive treatment that they were able to give, even where the dark field diagnosis was made and treatment was begun early, they only secured an average of about 71.4 per cent of cures. The best percentage of cures was 83 to 86 per cent. In those cases where the treatment was not commenced until they had a sero-positive primary, the average cures was only 53.3 per cent. The best treatment they obtained was 64 to 70 per cent. This means a loss of at least 18 per cent of cures if you wait until you get a sero-positive before commencing the treatment. On the secondaries, with blood positives, the average number of cures was 50 per cent. The best cures was 61 to 82.

Chargin and Stone reported a study of 444 cases of syphilis. Thirty-six were treated from the primary stage and they reported a cure of 90 per cent, while the cures in early secondaries was only 61 per cent and the late secondaries only 45 per cent of cures. Hence the great importance of early diagnosis and intensive treatment, if we are to prevent the ravages of syphilis.

Syphilis accounts for about 15 per cent of all the blindness in the country. We know that one out of every seven men and one out of every seventeen women sent to the hospitals for the insane are sent there because of paresis as the result of syphilis. We also know that a large percentage of the premature births and still-births are the result of syphilis. And the statement has been made, and it is perhaps correct, that from one-sixth to one-fourth of all the deaths from heart disease occurring in adults is due to syphilis. In other words, from seventeen to twenty-five per cent of all individuals who die from cardiovascular disease after they reach manhood and womanhood are due to syphilis.

Of the three great causes of heart disease, syphilis is the only one we absolutely can prevent if an early diagnosis is made and intensive treatment started at once. Syphilis ranks with cancer, pneumonia and tuberculosis; but, unlike these other diseases, our means of diagnosis, of prevention, and of cure, if universally applied, could absolutely prevent syphilis and the disastrous results that follow. It is sometimes astonishing why that hasn't been done, when the means of diagnosis, the means of prevention and the means of

cure are so simple, as compared with many other great health problems in which great progress has been made.

Now, one reason why we have the disastrous results that follow syphilis is because we haven't made our diagnosis early and because we have not followed it up with intensive treatment. We will not make our diagnosis early until we begin a syphilitic propaganda among the public, just as we have done concerning the prevention of typhoid fever, diphtheria, smallpox, scarlet fever, and some other diseases. I wonder how many individuals are in the habit of making public addresses before lay audiences in which they talked about the venereal diseases, their causes, the ways in which they are transmitted, the ways of prevention and the means of cure. Very few, comparatively speaking. I think every group of high school boys and every group of high school girls should have three or four lectures on venereal diseases before they leave high school. The time when they become infected is usually from the high school age up to twenty-five. Many of them leave the high schools with practically no knowledge concerning one of the diseases that is most disastrous to health and to life itself. Until we have done this and put on a thorough campaign among that class of students, we will have our blind, our insane, our crippled hearts and other sequela as a result of this disease—syphilis.

I want to thank Mr. McDaniels for carrying out these experiments and for outlining a way whereby the country physician, the man who is distantly removed from laboratories, can collect these specimens and send them in and get an early diagnosis. The field men in the Department of Public Health that visit the physicians in their territories should carry these little receptacles and explain to the physicians how specimens can be collected and impress upon them the necessity of making an early diagnosis and carrying on an intensive treatment.

Dr. H. J. Shaughnessy, Springfield, Ill.: When Mr. McDaniels presented some of this material in preliminary form in Indianapolis, one of the discussants made the point that several similar outfits had been described by various workers. None, we believe, is as good as the one which has been described this afternoon. But several have been described. And yet he wondered how much good they would be when they actually got out into practice. He said it was all very well to discuss them but he wondered what would happen when the practicing physician began to use them. Well, I have several figures that will illustrate, I think, two phases of this. The first is that, although this method has been in use for more than a year, the method has not been widely accepted by the practicing physician. It has been described before a good many county medical societies. That is the first problem we have to contend with. The second is that we have some knowledge now of what per cent will remain positive when the average practitioner takes the specimen. From January 1, 1933, to date in the main laboratory here in Springfield, we have received 29 of these outfits; only 29 to date, in spite of the fact that we have sent out several hundred in response to requests from physicians who were interested in seeing the outfit. Of these, ten were positive, eighteen were negative and one was unsatisfactory. In other words, about 35 per cent of those actually received were positive. We don't know yet, although we are getting such information, what per cent of these negatives were later proved to be syphilis by serological tests. But I think that, if we have a method by which even 35 per cent of suspected primary chancres can be diagnosed in the laboratory, that is a distinct advance. I believe, if we were to weed out the negatives which were definitely negative, that the percentage would be a great deal higher than that.

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## IMPROPERLY DIRECTED BIRTH CONTROL PROPAGANDA

EFFIE L. LOBDELL, M. D.

CHICAGO

Just as it is a published fact that there are more homes for babies than there are suitable babies for homes, so it is a fact that there are more demands for treatment for overcoming sterility than otherwise.

While there is an abundance of medical literature on sterility, we are today indebted to Dr. Leo Latz for bringing the subject up to date by combining the translation of Knaus and Ogina with interpretation of their research work available for our use.

For every truism, its opposite must also be true. Therefore in studying sterility, the rule for human fertility is discovered—and in place of a child being born, a new racket is born—which threatens to overshadow the original design.

Physicians devoting themselves unselfishly to the great problems of life and health, are apt to find themselves suddenly confronting a tragedy.

Estimated by a businessman, we are always "cutting our own throats" by solving these problems for an ungrateful public.

Unfortunately this leads many physicians to become careless of duties they should be informed of, or of giving information to their patients individually what they have a right to expect.

This leads to a class of exploiters who seem to lie awake nights to grab some important point on which to develop a lucrative business, taking the large group of uninformed and gullible public away from its natural resource—the doctor—into a most dangerous group, the exploiter.

Unfortunately, due to the want of organized activity on the part of the medical profession,

local and general, and the fact that newspapers, magazines and other sources of activity are so easily used to furnish worldwide publicity, propaganda by non-professional agents becomes all powerful in short order, not only using the subject to get themselves a salary, sell a device or a drug—but even to make personal calls on an inquirer.

A reading of their literature finds not only the main object, but perverse suggestions, which alone would bar them from the mail.

Here begins the tragedy of the conscientious doctor who, in attempting to add to the scientific and ethical information for the benefit of his fellow physicians, all of whom are not able to spend the time, money or travel necessary to gather the points being worked out for us by worldwide laboratory research.

This is where the younger men and women in the medical profession have the advantage of those of us bound down by our work more than ever before because of the unusual conditions we find ourselves in today.

This article is inspired by the day's publication, the *Chicago Sunday Tribune,* in its out of town edition, with a full page article titled "Science in Birth Control Quest Favors Natural Law" which will not be seen by the Chicago physicians or readers.

But why is it not in the Chicago edition? What is the policy behind this?

It presents the subject ethically; is well written and shows the highest type of authority is the basis for what promises to be a far reaching movement in correcting human behavior on a vital point.

How shall it be presented to the people at large? That is the question to be immediately determined. Shall it be *sold* as a commodity or shall it be *one thing* that can be handled by properly educated, licensed men and women.

We have all seen our attempts to train people to assist themselves in disease such as diabetes, tuberculosis, neurasthenia, cancer and other widely prevalent, exploited by an hotel chef, by a pseudo naturalist using turtle serum, by a pseudo psychologist and our cancer clinics run by women's clubs and other so-called research foundations *buying* the doctor and collecting all the endowments and income.

We have seen the local Birth Control League with its four branches, one of which sells outright contraceptives, the other three, after an examination costing $3.00, sends their prescriptions for supplies to a neighboring drug store which later rebates to the League. The printed last report gives an income of about $10,000 the year, about $4,000 of which is paid two examining physicians. The average cost to each applicant is $10.00 and there are a dozen or more of these clinics run by nurses and non-professional women trained to examine and advise.

On the Board of Directors are eminent names of doctors, clergy and citizens, whom I doubt know anything about its procedures.

Physicians in good standing endorse by letter many contrivances and methods peddled about by nurses and lay salesmen, before even patents are obtained.

Only yesterday I interviewed a representative of a so-called research laboratory which aims to cover every phase of human conduct in this movement, whose momentum is gaining such rapid headway because of the intensely human interest.

He was a layman without chemical, laboratory, or any special education which would fit him. He had acquired the professional vocabulary necessary to impress almost to that of an orator.

He was very frank in answering questions and taught me several things I did not know. The literature he left confirmed his statements.

Did you know that an injection of sterilized semen, subcutaneously or intramuscularly immunized the woman against pregnancy for one or even two years?

That a man subjecting himself to a very hot bath was sterile two weeks at a time?

Other equally startling facts are part of the distribution literature. The laboratory sends out instructed women to examine and advise women as to their particular needs and sells *anything* needed, the average expense about $10.00 per person.

The territory covered is *national.* They procure the names to be solicited from the local birth registration. After a woman has time to convalesce but not forget her discomfort from childbirth, she is visited *socially.* This party I interviewed claims to have personally called on 5,000 women.

The booklet contains many paragraphs of sex

information greatly exaggerated and greatly tending toward perversions.

Whose fault is this state of affairs?

Has not the time passed when doctors shall turn aside from vital, normal information to a patient? Shall he not inform himself through the excellent authentic books of today which he can use as authority if he shirks personal responsibility?

The author of one book has already met with me and 64 other physicians and personally demonstrated his reports as did also Dr. A. J. Miller of Hobart, Indiana, who told us of 800 cases of record and corrected some of the theories we had been taught.

The nonprofessional does not understand our attitude and are disgusted with those of us who refuse to accept general guidance of family health matters as did the old family physician, and they are informing themselves individually and by books.

I think, as a class, we are inclined to be asocial with our clientele except through golf, cards, and games, and we keep our groups too small.

Too many medical society and hospital meetings about trivial things take too much of our time. We are not enough interested in the big arts, music, pictures, sciences, either for diversion, creation or preservation of national ideals or the upbuilding and defense of our most noble profession from the mites in our midst.

We are too apt to withhold praise when another physician's name is mentioned. How seldom we hear of one praising another. How often one hears the criticism of another.

Would our work not be less vulnerable if we had more of the guild spirit?

Coming back to the subject under discussion, what is the immediate cure?

A movement by the high authorities to standardize the present authentic information as given by Knaus-Ogina and presented by Dr. Leo Latz, Dr. A. J. Miller, and others, making it so simple that all physicians shall be able to teach individually the man or woman applicant; to *compel* contraceptives to be under Federal Control, after endorsement by competent authority, and that publicity about methods be freely distributed so that the sex problem shall go back into its place as a lesser problem, which like other senses and physical functions has its own personal hygiene.

## RADIATION THERAPY OF GAS BACILLUS INFECTION

J. J. FAUST, M. D.
DECATUR, ILL.

Gas bacillus infection in civil life is becoming more common but it is still infrequent enough that many doctors have never had a case in their practice. With the automobile and highly developed mechanical age in which we live more severe injuries result. In 1929 there were 31,500 automobile accidents. With these severe injuries the gas bacillus infection has been attended with a higher mortality in the past. The average mortality has been about fifty per cent.

*Etiology.* Bacillus Welchii or Bacillus perfringens may be the most important and most commonly found organism but vibrion septique and B. hystolyticus also are frequently found. Some of the bacteriology manuals list as many as thirty types of organisms which may produce gas in the tissue. Some of these are less virulent than others and some are considered even non-pathogenic. The diagnosis bacteriologically is made by culturing the discharge or smear in suitable media under anaerobic conditions in an incubator. Gas may be formed in 6-8 hours in some cultures. This organism may be found in the alimentary tract of men and animals and may be isolated from garden soil and polluted streams.

The important sign of gas bacillus infection is crepitation due to the presence of gas in the tissues. The area usually has localized inflammation and swelling in the beginning. Extension is by contiguity. With open wounds a foul "mousy" odor is generally observed and most generally distinct and never to be forgotten or confused with other odors. Profound toxemia, rapid pulse and rising temperature generally occur. History of injury must usually be considered.

The use of prophylactic antitoxin and serum has saved many lives but results with this and surgery alone have not produced the results to be desired so far.

Whether the type of therapy being proposed will supplant the now used methods or only be an important aid is still an unanswered question.

There are several possible theories of the action of the x-ray but no one can as yet say just how the action occurs. But since results are ob-

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tained it is believed that the methods of therapy should be given publicity at this time for the good it may do.

One explanation of the action of the x-ray is that when x-rays are played upon nutrient fluids they are deadly to protozoa by producing small quantities of hydrogen peroxide. The presence of the hydrogen peroxide would be fatal to these anaerobic organisms. Due to the absorption of the hydrogen peroxide the x-ray treatments need to be frequent to produce more of the gas. This was found to be necessary in some of these cases.

Another theory of the action of the x-ray is that it causes the tissue to throw out a protein which may be resistant to the toxin of this organism. The x-ray could have acted as a catalytic agent by aiding the serum to act on the toxin in those cases in which it was given but this theory is not tenable in the last case where no therapeutic serum was given.

The technic of the x-ray treatment is 88 kilovolts peak, 5 milliamperes, 40 centimeters distance from target to skin, with 0.5 millimeter of aluminum as a filter for three minutes over each area. This single treatment gives 45 "r" units. This therapy is such that it may be given with most portable machines and hence may be available in many institutions where radiographic work is ordinarily done. When using a fine focus radiator tube the treatment is given for thirty seconds and then stopped for thirty seconds to allow the tube to cool and not overheat it. Thus the treatment is resumed with intermissions until six exposures of thirty seconds each are made and thus the three minutes of time is attained without damage to the equipment.

The serum used was made by Parke Davis and Co. and was of the mixed type containing 10,000 units each of the B welchii and B vibrion septique organisms.

The following cases are presented for consideration having received the above described treatments:

Case 1. This case was x-rayed almost daily to watch the amount of gas in the tissues in order to study the results and so that action might be taken if indicated. The details are as follows. Male, aged 15 years, June 3, 1933, while attempting to climb on a tractor fell under the plow following it, sustained a compound fracture of both bones of the right leg. Nearly all of the peroneal muscles were severed in the accident and dirt was ground into the wound. The patient was admitted to the hospital in shock and put to bed immediately. Hot boric acid packs were applied continuously to the leg. He was given Parke Davis and Co. mixed prophylactic tetanus and gas bacillus serum.

By June 6, three days later, the leg appeared in good condition and the patient appeared well in general with his temperature 99.6 F. and pulse 80 per minute. Under ethylene anesthetic the lacerated muscles were sutured with chromic catgut, the skin was closed with fine dermal sutures, and a Steinman pin was thrust through the os calcis for traction. After he was replaced in bed and traction was applied an x-ray of the fracture was taken. This initial x-ray showed gas bubbles in the tissue which were believed to be air at the time.

June 7, 4:00 A. M., the temperature was 102.6 F, pulse 100, and the leg painful and swollen. 8:00 A. M. two skin sutures at the anterior end of incision were removed, permitting some thick yellow pus to be discharged. Hot boric packs were reinstituted. 8:00 P. M. crepitation of tissues was first noted and the discharge had become thin and dark in color, containing gas bubbles and had the characteristic odor of gas gangrene. The skin over the entire leg anteriorly in the lower half down to the foot was black. Cultures from the depth of the wound contained large numbers of B. Welchii. The remaining skin sutures were removed and 8000 units of each type of combined serum was given intravenously. The temperature was 103.6 F. pulse, 120. The administration was stopped on account of the serum reaction.

June 8, 10:00 A. M. the temperature was 99.8 F. pulse 88, no crepitus was felt in the tissues. Radiograph showed less gas in the tissue.

12:00 A. M. a marked increase in toxemia and discharge had developed and more crepitus was present than before. The temperature was 102.8. 7000 units of serum was given intravenously with a severe reaction resulting.

2:00 P. M. The temperature was 101.6 and the patient was very toxic and hard to manage, the Steinman pin broke in two.

3:00 P. M. an x-ray treatment was given.

June 9, the temperature had dropped to 100.6 F., pulse to 100 during the night but at 8 A. M. the temerature had risen to 102.2, at 10:00 A. M. an x-ray showed gas bubbles confined to the site of the fracture. The patient was less toxic. Two x-ray treatments were given one at 10:00 A. M. and one at 3:00 P. M. Between 8:00 P. M. and 12:00 P. M. the temperature dropped from 102.4 F to 100.6.

June 10. The temperature fell from 100.6 F. at 2 A. M. to 98.4 the next morning at 2:00 A. M. The pulse remained at 100 all day. Granulation was noted at the edges of the skin, the discharge was reduced, the odor was less pronounced and the patient appeared in better condition, with less toxemia. One x-ray treatment was given.

The patient was discharged from the hospital at the end of the eighth week.

Eight x-ray treatments in all were given and the patient improved rapidly. Not much effort was made to extend the leg because of the broken Steinman pin, which had a flaw in it. There was not sufficient surface below the injury to apply traction and oppose the frag-

ments. Roentgenographically the orthopedic results are not so good but at the present time the leg is completely healed except for one point where there is a slight sinus due to sequestrum from a fragment of bone off the fibula. The patient has no foot drop and is able to walk with but a very slight limp.

Case 2. Mrs. H. aged 66 years, entered the hospital in severe shock with multiple lacerations on the left forearm involving the superficial circulation, tendons, nerves as well as the muscles from the wrist to the elbow. This happened in a bus accident at 5 A. M. July 15, 1933. The pulse was poor and irregular. The immediate prognosis was bad. At 5:00 P. M. an x-ray of the left forearm showed a fracture of the radius and gas bubbles out in the tissue. This was mentioned to the surgeon attending. The next day the arm was gangrenous and black and the shoulder girdle muscles were red and black, and showed signs of beginning involvement. The left arm was amputated six inches below the shoulder joint because of the many lacerations of the arm and forearm as well as the presence of the gas gangrene. Immediately after operation an x-ray treatment was given the involved areas from the front and back. The temperature was 105.6 F. and the patient was quite toxic. Gas gangrene serum was given to the extent of 6000 units. A culture from the wound was positive for gas bacillus. Two treatments were given each day for four days, one in the morning and one in the afternoon. Then one treatment was given on the next two days. A total of ten treatments were given in six days. After the third day the temperature was not above 99.8 F. again. Six and one half weeks from the time of entering the hospital the patient was discharged with the stump of the arm healed across.

Case 3. Mr. L. aged 72 years, was in an automobile accident and had a laceration on the posterior aspect of the left arm from just above the condyles of the humerus to the posterior axillary fold. The triceps muscle was torn from its tendon and split longitudinally into four or five pieces. The humerus, ulnar and radial nerves were bared for a length of about 25 cm. The skin of the dorsal surface of the hand was torn from just above the hypothenar eminence downward to the knuckles and above the thenar eminence. The skin on the forearm was pushed upward about 15 cm. The fascia had dry soil ground into it. Prophylactic mixed tetanus and gas bacillus serum was given. Both areas were cleansed with normal salt solution and mercurochrome, alcohol and acetone. The muscles were sutured to their tendons loosely and the skin on both areas was sutured with interrupted sutures. Gutta-percha drains were inserted into the wounds. Twenty-four hours after admission a small bleb was noted on the distal end of the radius, which showed crepitation on pressure. There was a foul smelling gray discharge from the wound with the characteristic gas bacillus odor on the next morning. The skin on the back of the hand and the ulnar side of the forearm was black. Cultures from the bleb and drains showed the presence of B. claustridium tertium. All skin sutures and drains were immediately removed and 10,000 units of serum was administered. An x-ray treatment was given and continuous hot wet boric packs over the entire arm were instituted. There was enough healing in the lacerated skin that it did not open except where the drains had been inserted. An x-ray showed gas bubbles all through the arm and forearm. Two x-ray treatments were given the next day and after the third treatment there was a sharp line of demarcation between the healthy and necrotic skin. On the fourth day he was given one x-ray treatment and 10,000 units more of serum. On the fifth day after the accident his temperature and pulse had returned to normal. He was given two more x-ray treatments on the next two days, and was discharged from the hospital at the end of two weeks in good condition. At the present time he has about 75% use of the arm and hands.

Case 4. Mr. N. aged 20 years, was attempting to cross a field when he was gored by a bull. As a result of this goring he had a ten inch laceration across the abdomen through the skin, subcutaneous tissue, and the right rectus muscle down to but not involving the peritoneum. The wound had hair, leaves and other debris in it. There was also a four inch laceration in the left axilla with hair in it also. The wound was cleansed, muscles and fascia were sutured, and a rubber drain was placed in position.

Gas in the tissue with crepitus was noted 24 hours later. Serum was given on the second and third days, 10,000 units each time. The temperature was 102 F. and the patient was restless on the second day when x-ray treatments were given and the highest temperature recorded was 100.8 F. Thereafter the temperature did not go above 101.2. Eight x-ray treatments were given to the right side, where the crepitus was noted, in four days time and the wound appeared almost well.

On the tenth day after the accident and six days after the last x-ray treatment was given gas and crepitus developed on the left side of the abdomen which had not been previously irradiated. Three daily treatments to this side, with no serum, were sufficient to cause the crepitus to disappear and relieve symptoms. Ten days after the last x-ray treatment the patient was discharged as well.

Case 5. Miss W. aged 21 years, had an appendectomy, bilateral salpingectomy and right oophorectomy by the same surgeon who treated case 4, above, the same morning. He changed his gown and gloves, however, and if contamination occurred the mode was not known. Since she was dressed in the wards by the same nurse after the operation, the direct means of infection is unknown, but three days after the operation she had a foul-smelling discharge from the incision. A culture from the wound was positive for gas bacillus. One dose of serum of 10,000 units was given the day the odor was first noticed which was the third post operative day. The temperature was 101 F. and the patient was restless. Two x-ray treatments were given each day over the incision for the next four days. The temperature was never up to 101 F. again. The discharge and odor were quickly stopped. The patient made an uneventful recovery and was discharged as well on the 21st postoperative day.

Case 6. I was called in consultation to see a young soldier on a Sunday in November who had been accidentally shot, by an army rifle, through both thighs. The bullet entered the left thigh and tore a large hole through it at least two inches in diameter on the side from which it emerged. The injury to the right thigh was not so great and the bullet was stopped by the right femur. When I saw the young soldier, four days after the accident, he had had the left leg removed near the hip in an attempt to stop the gangrene below that. He was delirious and his temperature was above 102 and his pulse about 140 per minute. He had had at least four blood transfusions and the prognosis was very bad. Three or four injections of 10,000 units of gas gangrene serum had been given also prior to my seeing him.

X-ray treatment was started and two treatments were given that Sunday and two on Monday. The doctor wrote that the odor had decreased considerably and the boy was again rational but very weak. He was given a treatment on Tuesday and appeared to be doing well until near noon. He was given some more serum then. He then made a change for the worse and died late in the afternoon. It is believed by one doctor attending him that he died from shock or a combination of shock and reaction from the serum which may have had an anaphylactic reaction. In the beginning he did respond quite well to the x-ray therapy but the four day delay was too much to be overcome in addition to the other factors to be considered.

Case 7. Mr. O. was fired upon the evening of Feb. 6, 1934, and a bullet passed through the left buttock injuring the gluteus maximus muscle. He was given tetanus and gas bacillus antitoxin prophylactic combined, when he was given first aid. The next morning there was evidence of gas clinically. No effort was made to sustain this diagnosis by bacteriological examination. The tract of the wound was opened wide and a debridement done, including the removal of portions of the gluteus maximus muscle. The wound was dressed wide open and packed with hydrogen peroxide. He was given two x-ray treatments that day, one in the morning and one in the evening, and for the next four days until he had received seven treatments in all. No serum was given in the treatment at all, only the prophylactic dose. The temperature ranged between 100 and 101 F. for the first week and the pulse reached its height on the fourth day of 104 and dropped to 80 by the end of the first week. It was normal after this for temperature and pulse. A secondary closure was done two weeks later and the patient was discharged March 5, 1934, with the wound healed and well so that he was able to return to work.

This case is reported through the courtesy of Dr. S. B. Herdman who saw with me the patient who died. It was there that he got the technique and hence my reason for including it in this series.

### CONCLUSIONS

1. All patients recovered whether the wound was in an extremity or not, with one exception:

2. The patient who died did show signs of improvement for a time and it is believed that the shock of the operation, delay in using effective treatment and possibly an anaphylactic reaction were the causes of his death.

3. The serum used was supposed to be specific for B. Welchii and B. vibrion septique, whereas two cases had B. claustridium tertium infections. Since the serum was not positive for this organism it may not have had anything to do with the results and the x-ray may have been entirely responsible for the cures.

4. The x-ray treatments are a definite aid to recovery from gas gangrene infections.

5. The mode of action of the x-ray is not known although more is learned about its action with each case treated.

*Comment.* Should new cases be found we intend to try early x-ray treatment alone and use the serum only if results are not favorable in a reasonable time.

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### DISCUSSION

Dr. I. S. Trostler, Chicago: I want to compliment the essayist on reporting several interesting cases, very much in detail; but I fear that I must take exception to several things that he said. One of these is the description of his technique, wherein he mentions "inches of spark gap." That is not at all scientific because spark gaps differ, whereas kilovolts are always the same, and such a description cannot under any conditions be accurate.

Another point that I take exception to, is the mention that portable apparatus may be used for this therapy. I fear that statements like that are liable to lead men to attempt to administer roentgen therapy with portable apparatus, and such action is bound to throw our efficient therapeutic agent into disrepute.

Also, the fact that all except two of the essayist's patients had had prophylactic or antitoxic serum administered must reduce the value of this report, from the roentgen therapy aspect; because the producers of the sera will—with ample justification—claim that their sera effected the cures.

Dr. Roswell T. Pettit, Ottawa, Ill: During the war I had charge of an experimental laboratory for wound bacteriology, for the purpose of culturing wounds before they went into the hands of the surgeon. Afterwards associated with a French pathologist, Professor Sacquefrees, the discoverer of one of the organisms causing gas grangrene, we procured serum from the French Army for use in American soldiers. We used

serum in alternate cases of serious wounds that would likely cause gas gangrene.

It was our purpose to secure 100 cases treated with serum and 100 control cases of exactly the same sort, with the idea of presenting this data to the American authorities and get them to produce serum. The armistice came along and interfered with our plans, after we had collected forty cases.

In the forty cases that received serum as compared with the forty cases that did not receive serum, we found that the serum was of very great value. I cannot remember the statistics but my paper was published in the Journal of the American Medical Association in 1919. There were something like four or five times better results in the serum-treated cases than in those that did not receive the serum, but, as I recall, even in our best results, we only cured about one case out of three.

The number of cases as reported by Dr. Faust is small. The conditions of civil life, of course, are very much different from those met with during the war. The length of time in getting patients to the hospital, getting them under care and observation, may account for Dr. Faust's remarkable results, but I think he has a lead that is well worth investigating.

This is a subject that is readily amenable to experimental study. Gas gangrene is easily produced in animals and we ought to be able to study this question of the value of x-ray very easily and determine beyond a question of a doubt whether or not x-ray is of any value.

Dr. J. J. Faust, Decatur, Ill.: With regard to the use of the 5-inch spark gap statement, I will simply state that my machine happens to have the markings, 3-inch, 4-inch and 5-inch spark gap. It was for that reason I stated it that way.

It so happens, too, that all of my cases were treated by a portable machine. We did not care to move those patients from their rooms to the x-ray department and take the chance of contaminating anything. The arm which was amputated was amputated in the room because we did not even take the chance of contaminating the operating room.

The case that was reported by the other doctor was also treated by a small portable machine.

## SANITATION OF THE COUNTRY HOME

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At this season of the year, countless numbers of people complete plans which they have been making during the preceding winter and spring and go on a vacation.

One of the foremost factors to be considered for this event is the sanitary condition of the camp, lodge, or summer home. This is of special importance in cases where the camp chosen is frequented by a large population. This matter has been greatly simplified, as the efficiency of our local and State sanitary officers has resulted in changing many a disease infested community into a healthy resort, free from all contamination.

During the Spanish-American War in 1898, the mortality from diseases acquired in camp duty exceeded by a large number those killed on field of battle. One camp known as Chickamagua Park in Georgia, was simply infested with disease, due to flies, mosquitos, and other insects: some twenty years later this same spot became the training camp for a majority of the medical departments of the army during the World War, but in the meantime the picture had changed. The swamps and polluted streams had been drained, all breeding places for flies and mosquitos had been destroyed, installation of scientific sewage systems had been made, with the result that even with the large population cared for, there was absolute freedom from all infectious fevers.

There is no longer any excuse for these former epidemics to occur. The principles involved in modern sanitation are very simple and interesting. We have learned to make use of natural resources at hand to solve the problems of prevention. As a result of constant instruction in all matters pertaining to health problems given through the press, platform and radio, these are no longer mysterious, but the layman of today understands the principles. By making use of these factors, it is possible to render every locality free from contamination and infectious diseases which formerly were so serious.

Our forefathers were acquainted with the advantageous use of fertilizer to increase the yield of crops, but they did not know the reason for this disintegration, or breaking down of the different substances into their original elements. Today every school boy and girl is acquainted with these processes, rendered possible by the presence of bacteria, and knows that all excreta is poisonous, or toxic, to the organism from which it comes. Upon this basis of knowledge, sanitary engineers have developed the efficient sanitary systems found in every great city and hamlet today.

But it is in the isolated locality, distant from these improvements that we are especially in-

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terested at this moment. Every camp or country home should have a suitable sewage system for the welfare of the occupants. Should you be fortunate enough to have a country or lake home, be it small or large, by applying the same principles used in the large systems, an individual basin or septic tank can be installed and operated in every home with perfect results. For efficiency, running water is necessary. Even this can be obtained in many ways.

An electric pressure pump is of course the ideal, but if either because of the expense, or absence of power, this is impossible, a hand or power pump adequate for the needs can be used to elevate the water to a tank. The use of a barrel, several connected in a series, or some other type of tank, placed on the roof, or in some adjacent elevated position becomes necessary. If you are fortunate enough to be located near an elevated spring the use of a ram can readily be made, to elevate the water to the tank. If no well is at hand, collection of rain water into a tank will be advisable, and if this is large and high enough it will serve the purpose for a gravitation water supply.

Any of these systems will furnish enough water pressure for the purpose of establishing a sewage system. The pipes and drains empty into a reservoir of various types.

In homes, where the well is used as a source of drinking water, it is necessary to construct a specific type of tank to adequately dispose of sewage. Either a cesspool or a septic tank may serve the intended purpose, but having different characteristics, the individual circumstances must be considered.

A cesspool is merely a hole in the ground, ten to twelve feet deep and four or five feet in diameter. This is usually lined with stones. It is intended that the solid materials will be broken up by the bacteria and form liquids, which together with the liquid parts of the sewage will soak into the ground, consequently if this type of system is installed, at a distance less than one hundred feet from the well, we may have a very unsanitary method of sewage disposal.

The so-called septic tank on the other hand removes all these objections: in it the solid materials are completely changed into liquids which pass from one compartment to another and insure complete decomposition by the bacteria before they are carried out and drained into the soil. The principles applied in the septic tank, regardless of the type used are the same. They all contain two or more chambers, separated by a partition which permits overflow near the top. The sewage from the toilet and elsewhere empties into the first chamber which is constantly filled to the level of the upper edge of the partition. No chemicals or other types of disinfectants are necessary to sterilize the material, as the bacteria cause constant disintegration to take place. A film known as the "Smutz Decke" forms on the upper surface of the fluid, increasing the efficiency of the bacterial destruction. These septic tanks may be constructed of various materials. They can be made of planks, making a water tight box with inlet and outlet, and a partition of suitable size for the population to be served. As the wood, even though coated with tar has a tendency to rot and cause leakage, one constructed from cement is far more desirable. The metal septic tanks, however, which can be purchased at a small figure, ready for installation are better in all respects and longer lived. The danger of leakage from rotting or cracking is more remote. Consequently this installation should be made whenever possible. In case this description of the principles applied in the septic tank as given are not clear, I shall be pleased to answer any questions relative to the principles involved, sent in care of this station.

Another factor to be considered is the disposal of garbage from the kitchen and table. If you have a wood burning stove the matter is simplified to a great degree, otherwise all garbage should be burned, or buried in such a way as to protect it from being uncovered by animals, thus becoming exposed to flies and other insects. Dig a deep hole in the ground, away from the source of water supply, cover with a suitable lid and keep it closed. Occasional sprinkling with dirt or sand, will hurry disintegration and prevent odors from arising.

I have said nothing about the source of your water, milk, and food supply. These important items must be had from reliable sources, before using them.

Upon your return from that fishing trip, one of the pleasant sequels is the cleaning of the catch. Careless disposal of the trimmings will tend to attract flies and other insects. Consequently nothing of this nature should be per-

mitted to be exposed. Buried in the ground it will act as an excellent fertilizer. The Indians knew of this, as they would always place a piece of fish by every grain of corn to stimulate rapid growth.

If you are making use of the various tourist camps which are at the disposal of the public throughout the land, you should adhere to all rules of sanitation as far as possible. Use the refuse depositories when these are provided and do your bit to keep things clean for all those who are due to follow. In traveling and working about the camp the hands easily become soiled. The use of soap and water prior to eating is therefore more necessary here than when at home.

The desire to rough it must not be interpreted as synonomous with uncleanliness. Carried out as nature, which is in itself very cleanly, intended it, the vacation will be a happy one.

## MODERN CONCEPTION OF CANCER OF THE LARYNX

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Progress connotates continuous change. In a progressive science such as medicine, it is not unusual to find a changing conception in some phase or another of any pathologic process that is clinically treated as a "disease." It may be profitable at one time or another to pause and critically review our present day conclusions regarding a pathologic process in comparison to what was acceptable a decade ago, in order that any worthwhile change might find application in daily practice. We have been forced to accept certain innovations in our ideas concerning carcinoma of the larynx in the past ten years and it is our intention to review these and present them for what they are worth. No detailed statistics will be given, but only those broad, and what are to us important observations and conclusions, will be reported. It is to be stressed that no claim for originality is made for any of the following as the material is only presented with the idea of describing those changes that have appealed to us most strongly in our management of carcinoma of the larynx.

Read before Section on Eye, Ear, Nose and Throat at annual meeting of Illinois State Medical Society, at Springfield, May 16, 1934.

*Etiology.* A careful review of most of our material could establish no factual data with any significant bearing on the etiology. It is strange to note that only a few of our patients pursued any vocation that might lead to vocal abuse. A review of the vocational activities of our patients shows that singers, hucksters, lawyers, public speakers and the like, were conspicuous by their absence. Smoking apparently did not play an important role as many non-smokers, including several women, who did not indulge, were victims of this affliction. Addiction to drink was acknowledged by only a few. Heredity, so often stated as a predisposing cause, apparently played a minor role in our series of cases. The development of malignancies from precancerous lesions such as keratosis, papilloma or lues is likewise lacking in confirmation in our series. Few, if any, of our cases had such lesions prior to the development of their malignancy, so far as we could determine by history. Study of the age incidence shows that carcinoma of the larynx occurs most frequently between fifty and sixty years of age, although the decade of thirty to forty years also has a fair incidence. Our youngest patient was twenty-nine years of age and we have had several in the early thirties. The statement that carcinoma of the larynx occurs in older individuals requires qualifications. Early middle life and even the late twenties are not immune. Cases have even been recorded in young people, mainly women, of fifteen, sixteen and eighteen years of age.

*Classification.* The site of origin, as a rule, was difficult to determine in the great majority of our cases. The largest number seen by us were extrinsic, either previously so or by extension.

From a surgical point of view we designate as intrinsic only those growths that involve the true or false cord, or the ventricle of Morgagni in the anterior two-thirds of the larynx. Growths that arise from the epiglottis, aryepiglottic folds, arytenoids, post-cricoid area, pyriform sinuses, or the posterior third of the true and false cords and primary intrinsic growths that involve these areas by extension are designated as extrinsic. From the point of view of surgery, the terms extrinsic and intrinsic are synonymous, to us at least, with inoperable and operable. It is, of course, acknowleged that certain extrinsic growths may be amenable to surgical intervention by lateral or trans-hyoid pharyngotomy.

The inclusion of neoplasms of the posterior third of the true and false cords as extrinsic and unsuited for laryngectomy may excite comment. Most of our cases of carcinoma of the larynx in which the posterior third of the larynx was involved, had a recurrence after a total laryngectomy forcing us to include these in the extrinsic growths that are unsuited for laryngectomy. The mixed types represent those malignancies that are anatomically both extrinsic and intrinsic. Most of our cases are of these mixed types. This is a most lamentable situation. It is realized that in all probability many of these cases were originally extrinsic and therefore inoperable from the start, yet, our experience has been that most of these patients had been neglected for a long period of time. The greater number gave a history of hoarseness persisting from several months to well over a year. It is not difficult to conceive that were they all observed at the initial onset of the hoarseness they might have been seen in the intrinsic and, therefore, operable stage.

It is indeed a serious indictment of our profession to note that practically seventy-five per cent. of the cases had been neglected to such an extent as to be inoperable. A careful consideration of our case histories has shown that the fault lies both with the laity and the profession. The former have been negligent in procrastinating with hoarseness for a long period of time before seeking the aid of a physician. But the profession has also been at fault. Many of our patients were under the care of a physician, most frequently the family practitioner, who treated them for chronic laryngitis, without ever once using a laryngeal mirror. To our minds this is reprehensible. It should be our duty to instruct the family physician, as well as the lay world in general.

We shall have attained success when the patient will seek immediate advice if afflicted with hoarseness that persists more than a week or two. Furthermore, the informed physician will perform a mirror examination of the larynx in any patient complaining of hoarseness and have a biopsy performed if any suspicious lesion is present; obviously if nothing frankly suspicious is seen, he will still keep the patient under careful surveillance so long as the hoarseness persists. In no other internal portion of the body is such an early warning apparent to the patient. The laity must be instructed to be "Hoarseness conscious" as a sign of cancer of the throat, just as they have become "lump conscious" in cancer of the breast.

*Pathology.* A review of the gross pathological features of our material has taught us that carcinoma may simulate macroscopically many benign and inflammatory lesions. We are forced to admit that we have erred several times in arriving at a diagnosis of tuberculosis or lues only to find ultimately that we have been dealing with a malignancy. We have seen even apparently benign papilloma or fibroma reveal a malignant structure under the microscope. We have also experienced the co-existence of carcinoma with tuberculosis or lues and, in fact, have seen one specimen showing all three processes. We have, therefore, promulgated the following dictum:

"A biopsy is indicated in every case of laryngeal pathology in which carcinoma is diagnosed, suspected or even remotely considered." We are well aware of the theoretical possibility of hastening the spread of a malignant lesion by the trauma incident to biopsy and we make it a condition of the procedure that the patient permit immediate surgical intervention if the report is returned as malignant.

*Histology.* The histological characteristics of carcinoma of the larynx have been repeatedly described. We have reviewed a series of microscopic sections of seventy-two cases seen within the past five years, and have found them to be squamous cell types in sixty-nine instances and transitional cell epitheliomas in three instances. Lympho-epithelioma has not occurred in this small series.

The histological characteristics are extremely important to the clinician. We, as well as others, have written on the slow growth, dilatory extension and metastasis and the relative resistance to irradiation that characterize the adult differentiated squamous cell growth in contrast to the rapid growth, early wide, diffuse metastasis and relative radio-sensitivity of the non-differentiated embryonic carcinomas, especially the transitional and lympho-epithelial varieties. As stated before, practically all of the epithelial malignancies of the larynx grow slowly and metastasize late. The explanation, in the past, accounting for the re-

striction in spread of a laryngeal neoplasm was that it was enclosed in a cartilagenous box devoid of lymphatics. That this assumption does not have a factual basis is obvious. The cartilagenous box, as is well known, is deficient in cartilage, superiorly, inferiorly and posteriorly. Moreover, recent investigation has shown that the cartilage has a rather plentiful supply of lymphatics. The true explanation undoubtedly lies in the biologic characteristics of these adult fully differentiated neoplasms.

*Cervical Adenopathy.* The presence of lymphadenopathy in association with a malignancy of the larynx offers a poor prognosis. Yet many believe that such a condition is not altogether hopeless. Crile in the United States, and Trotter in England have popularized the surgical removal of malignantly infiltrated cervical lymph-nodes and reported some degree of success. Our experience has been a most melancholy one. No patient afflicted with a carcinoma of the larynx and exhibiting palpable lymph-nodes is alive today. Seven patients with a primary lesion of a larynx that was intrinsic, surgically speaking, and presenting palpable lymph-nodes were operated upon by complete laryngectomy and bilateral block dissection of the lymph-node bearing areas of the neck. No one survived any appreciable length of time. Apparently the theoretical assumption that palpable lymph-nodes are frequently enlarged by an infectious process, rather than malignant metastasis, is not borne out in our small experience. We are forced to conclude that palpable cervical lymphadenopathy makes for a hopeless prognosis, no matter how favorable the laryngeal lesion may appear, and is, therefore, a contraindication to surgery. We have also treated metastases in the neck by irradiation, x-rays, radium collar and interstitial radium emanation seeds with similar lack of success.

*Motility of the Vocal Cord.* Impaired motility of the vocal cord has been repeatedly and unfortunately stressed as an early sign of malignancy. It has further been affirmed by many writers that the motility of a cord was a differential characteristic that aided in the distinction between a malignant and benign process on the false assumption that a malignant growth was associated with a more or less fixed cord and that a freely motile cord tended to exclude malignancy. We have seen a number of cases of intrinsic carcinoma without fixity of the vocal cord and in which hoarseness and a visible tumor were present. Our conclusions are obvious—impaired motility is not an early sign of malignant disease of the vocal cord and its absence does not indicate the presence of a benign process.

A fixed or poorly motile cord was found in every case in which a recurrence was noted after laryngectomy, and all cases of the mixed type of intrinsic and extrinsic malignancies, that we have termed extrinsic and inoperable, were associated with a fixed cord. We, therefore, are forced to assume that malignancy may be present in a freely motile cord, that fixity speaks for progression of the lesion; that a fixed cord contraindicates laryngofissure and influences the prognosis for the worse if laryngectomy is employed.

*Treatment.* The modern treatment of carcinoma of the larynx resolves itself into a consideration of surgery, irradiation, or both.

*Operation by Laryngofissure.* This procedure appeals to us as the operation of choice. It is, when compared to laryngectomy, non-mutilating, relatively free from marked post-operative shock, and usually associated with the retention of a serviceable voice. Unfortunately it is indicated in only a small percentage of the cases observed—in our experience a very small percentage indeed. In our opinion it is indicated only when the neoplasm is small and restricted to one vocal cord. The disease must not have invaded either the anterior or posterior boundary of the cord and the cord must be motile. The lesion must, furthermore, be an adult squamous cell growth with no palpable glands present in the neck. When these indications are met the operation should prove adequate for a lasting cure in a high percentage of the cases. It is indeed unfortunate that we are not able to see more of our malignant laryngeal cases in such early stages that this procedure will effect a cure.

The technique has been so well described by Sir St. Clair Thompson and others that it leaves little to add. We have modified it in a minor detail using an electrically driven circular saw devised by myself for performing the division of the thyroid cartilage.

*Laryngectomy.* This procedure is still a thera-

peutic sheet anchor in the management of these unfortunate individuals. The indications for its use are precise. Any intrinsic laryngeal malignancy that is not suitable for laryngofissure may be treated by laryngectomy with some hope of success.

The technique of the surgical extirpation of the larynx has been so well described that it would be superfluous to repeat it here.

*Irradiation Therapy.* Our experience, limited it is true, has consisted in the use of deep x-rays and interstitial application of radium into the growth after a window resection of the thyroid cartilage or some other surgery of approach has been performed.

Our experience with irradiation therapy in the past has been a most unhappy one. Aside from the frequent complication of dermal and cartilagenous dystrophies we have observed little if any effect upon the growth itself. Within the past few years, however, important technical advances in the use of these potent agencies has enabled us to observe more encouraging although not overly impressive results.

We are interested in two methods at the present time. One is the use of the four gram radium pack or so-called bomb. This consists in the use of four grams of highly screened radium at a distance of six to fifteen centimeters, utilizing several portals of entry. Tremendous doses may be administered to a lesion within the larynx apparently without the disastrous sequalae noted in our earlier experience. We have noted the disappearance of the lesions treated in a number of cases but unfortunately recurrences have occurred in some and the method has not been used over a sufficiently long period of time to determine definitely its true value.

The second method is Coutard's protracted fractional dosage with x-rays. The results of this method have been more promising although primary disappearance of the growth is frequently followed by a recurrence. Certainly the results from both of these methods do not compare with what we can expect from laryngofissure and laryngectomy in properly selected cases. Yet these methods have superseded the use of interstitial irradiation with radium or radium emanation in our practice.

We have, however, been tremendously impressed by some of the primary disappearances of extensive extrinsic, inoperable lesions and use the Coutard technique in all inoperable cases.

Irradiation therapy today then is in a more promising position as regards concrete results, especially with the Coutard technique. Let us hope that time will realize the promise which it offers.

## DISCUSSION

Dr. H. L. Ford, Champaign: I would like to thank Dr. Guttman for this very illuminating article. I think it is beside the point for a downstate man to discuss a paper of this type. Some one from County Hospital or elsewhere who has a wealth of material from which to collect cases and study them in detail, with special reference to the use of radium, is better qualified to do so. In four or five years they might be able to prepare a paper with results comparable to this.

This is certainly a painstaking survey of cases of carcinoma of the larynx which have come under observation of Dr. Guttman and Dr. Beck, and Dr. Guttman should be complimented for his unbiased opinion and the logical conclusions drawn from this series. In every discussion of carcinoma of the larynx the first consideration must be early diagnosis. The literature is replete with warnings of chronic hoarseness and the danger of procrastination. In the rather rare instance in which the growth starts above or below the vocal cords, there may be marked advance with lymphatic involvement before the patient realizes his danger. It is therefore fortunate that the great majority cause hoarseness by originating on the surface of the anterior two-thirds of the cord, their proximal walls, the ventricle of the larynx, and the anterior commissure.

MacKenty had never seen a cancer start in the interarytenoid space, so frequently the seat of tuberculosis. Also, he mentioned that a common stumbling block was the presence of a positive Wassermann, and warned emphatically that ure laryngeal syphilis recedes with unmistakable rapidity under anti-luetic treatment. For extrinsic cases particularly, it is to be hoped that the more frequent use of direct examination, including hypopharyngoscopy, and suitable cancer propaganda, will bring about a much to be desired earlier diagnosis.

There is general acceptance of the value of biopsy, although there may at times be limitations to its value, as attested by the failure of Virchow to diagnose malignancy from three submitted specimens in the case of Emperor Frederick II. Care must be exercised in securing a portion of the base of the lesion as well as part of the normal tissue. Clerf recommends a rapid paraffin method with serial sectioning, which gives a reliable report at the end of eighteen hours, rather than a frozen section, stating that the most difficult and important part of the procedure is the removal of the specimen for study. The consensus of opinion seems to be in favor of biopsy—most authors, including Bloodgood, Jackson, and Ewing, feeling that the fear of extension or dissemination has been over-emphasized.

Surgical technic having been established to a high

point of excellence, it has fallen to the realm of histopathology and irradiation therapy to record the advances of more recent years. For several years, and especially since the work of Broders and McCarty, pathologists have based their interpretation of the benign or malignant features of a tumor upon its ability to mimic normal tissue, or to grow in a wild undifferentiated, anaplastic manner. One difficulty arises, however, in that not all pathologists follow the same method of tumor grading.

If, accepting Broder's classification, we recognize four types, one to four—one having 75 per cent. of differentiated cells tending to mimic the normal cell type, and type four having 25 per cent.—to no differentiated cells, with the intermediate classes between; while certain relations between the histologic structure and the response to radiation are recognized, notably that type I tumors are radio-resistant, and type IV are relatively radio-sensitive; yet exceptions are encountered wherein the radiation response may be directly the opposite of what is anticipated. It is therefore evident that factors other than cellular differentiation have an influence on the relative radio-response of a given tumor. The blood supply, the infiltrative character of the cells, the stroma, the lack of reaction on the part of the surrounding cells may, according to Douglas Quick, alter the response to irradiation, although it does not change the histologic grade. This author further states that—"Grading is a problem of histology alone. Classification of relative radio-sensitivity is a matching of histological and clinical pictures. Determination of probable response to irradiation is based on a much broader background."

Grade I tumors are usually the more radio-resistant, slower in growth, and tend toward some degree of localization. Metastases are late, and tend to remain localized to adjacent areas. It is in such cases that surgery has its greatest application. Anaplastic, or grade IV tumors, metastasize early and widely, and may extend through the blood stream as well as through the lymphatics. The metastatic lesions oftimes are more pronounced than the primary. According to many recent writers these undifferentiated growths are obviously not adapted to surgery, which even in its radical form is only a local measure. Among other factors which influence radio-sensitivity are infection, anemia, the age of the patient, the age of the tumor and its location.

There are exacting indications for laryngofissure and for laryngectomy, as so ably portrayed by Dr. Guttman. When one correlates this with statistics from Thomson and others where tumor grading is used and percentage recurrence noted in the various grades (72 per cent. in grade IV, 26 per cent. in grades II and III, and 6.6 per cent. in grade I—the latter group, however, comprising only about one-fourth of the cases suitable for laryngofissure) one cannot help but feel the very definite limitations of surgery alone. On the other hand, to date the statistics on radium and x-ray therapy, with five year arrests, are anything but encouraging. It is to be hoped that greater success will follow the recent advance in radium therapy—the mass radiation with the external radium pack properly screened permitting the use of 60,000 mg. hours to each side of the neck, in a constant unbroken series of treatments over a period of 28-35 days; also the high voltage external x-radiation, using the technic of Coutard of the Regand Clinic in Paris.

Dr. Francis L. Lederer, Chicago: I am sure we all enjoyed this excellent summary of an interesting subject. Dr. Guttman in going over these various etiologic factors tried to bring out some of those stressed in the literature, and makes a point that I think should be borne in mind by all of us, regarding the factor of smoking. I have seen four cases of carcinoma of the larynx in women, in no instance did they smoke. I failed to gather that he said much about the dentures and poor dental hygiene. Boot's statistics of a survey at County Hospital covered the etiology very well. He went into a careful analysis of the types, the factor of syphilis, etc., and yet I do not think that after as careful a survey as this one made at County Hospital, you have much light thrown on the etiology of carcinoma. This discussion of intrinsic and extrinsic types recalls an article given recently by Perlman and Sonnenschein. The idea of trying to evaluate the pathology is excellent, but their conception of what constitutes intrinsic and extrinsic is entirely different from what Dr. Guttman or Dr. Beck might offer. I was sorry to learn that he had such experience with posterior one-third lesions of the vocal cord. I hope that this is only his personal experience, as we have always looked upon these as favorable cases. If 75 per cent. of their patients were operable, that does not compare favorably with ours. At the Research and Educational Hospitals we see less than 1 per cent. of cases which could be adequately judged in the intrinsic or operable group. MacKenty found 80 per cent. and he even refused to operate on a patient who had had x-ray or radium therapy before coming to him. I would also stress that there is quite a difference between the microscopic and macroscopic picture. Certainly the eye does not see the actual tissue invasion, and that may account for some of Dr. Guttman's bad experience.

The indictment in the neglect of laryngeal carcinoma should be not of the laity or the physician, but of the laryngologist himself. He himself must be hoarseness conscious. The lost art of indirect laryngoscopy for biopsy must be revived. The adenopathy in the mind of a number of authorities is not always associated with a metastatic growth. I think the experience Dr. Guttman cites of metastasis in the neck being quite unfavorable, surgically and with x-ray or radium, compares very favorably with our experience.

Instead of taking sides with the radiologist, we should not take the attitude that radium is a cure-all; we should not take the attitude that the surgical side is the only cure, but perhaps if we were in a position to get together and try to evaluate our findings on some rational basis we could get further by a combined attack. The statistics that now appear with regard to the radium cures have been in the literature for years before the radium bomb cured the cases, even before radium therapy was in the perfected state it occupies today. Surgery of the larynx has its tradition and its cured cases over a period of many years;

radium and x-ray have yet to demonstrate in a large number of cases the permanency and the reliability of effecting a cure.

Dr. Max Cutler, Chicago: First allow me to express my sincere thanks and appreciation for the privilege of addressing your society. I was very much interested in Dr. Guttman's presentation. I should like to take this opportunity to describe very briefly certain investigations which I am conducting in the Tumor Clinic of the Michael Reese Hospital in the treatment of cancer of the larynx.

The Coutard technic of x-ray therapy essentially consists of a protracted method of treatment in which the lesion is exposed to radiation twice daily over periods varying from two to five or six weeks. The total dose is large. In the treatment of cancer of the larynx two lateral fields are utilized, each receiving between 3500 to 4000 R units. The technic which I have instituted differs from the Coutard method, first, in an extension of the factor of continuity, and, second, in the utilization of the more penetrating gamma ray of radium. According to this technic a cancer of the larynx is exposed twice daily for 45 minutes at each exposure with four grams of radium at 10 centimeters distance. The portal varies between 35 and 80 square centimeters, depending upon the extent of the lesion. Treatments are given daily, consecutively, and without interruption for periods varying from 20 to 50 days. The total dose varies between 100,000 and 125,000 to each side of the neck. Treatment is continued until there develops in the mucous membrane around the growth a lesion which is known as "epithelite." By an epithelite we mean a destruction of the superficial layers of the epithelium. In order to produce this characteristic lesion in the normal mucous membrane it was necessary until recently to also produce a similar lesion in the superficial layers of the epidermis, known as an "epidermite." By means of a technical improvement in our new four-gram radium pack, it is now possible to produce the desired lesion in the mucous membrane without producing an open and destructive lesion in the skin.

This method has now been in use almost two years. The time is therefore too short to estimate the ultimate results. The initial effects upon the growth have, however, been most striking. One early, adult squamous carcinoma, limited to one vocal cord, with slight fixation, disappeared completely and the patient is now well almost two years. Several more advanced lesions have disappeared and the patients have remained well for periods varying between twelve and eighteen months.

It is interesting to note that in Coutard's treated cases of cancer of the larynx the percentage of recurrences after fifteen months' freedom from symptoms was almost negligible. Because of this fact some significance must be attached to these results even though the period of time is relatively short.

The one important problem which it was necessary to settle from the outset was whether the normal tissues of the larynx could safely withstand this large amount of gamma radiation. This question we can definitely answer in the affirmative. There have thus far been no serious damage to the normal structures. The reasons for the safety of the method are believed to be due to the following factors: 1. high filtration, 2. low intensity of treatment, 3. uniform distribution of dosage. It is obvious that if large doses of this character were to be administered during a short interval, a radionecrosis would be certain to follow.

It is important to emphasize that in attempting to estimate the relative merits of surgery and radiation in any form of cancer one must appreciate that the modern and effective use of radium and x-rays is of recent date and can in no way be compared either in principle or in technical execution with the older methods.

Early localized cancer limited to one vocal cord constitutes the ideal setting for radiation therapy as it also does for surgical methods. Until we have an opportunity to demonstrate the effectiveness of this method upon early lesions of this type, it will be impossible to present any comparative statistics. On this basis I should like to make a plea for the opportunity to study the effect of this method upon more cases presenting early lesions, as only in this manner can we hope to make further progress in the treatment of this disease.

Dr. Joseph C. Beck, Chicago: I want to say just one thing that has nothing to do with the voice. You must be all convinced that there has been a great advance in radium therapy, after hearing Dr. Cutler, who was kind enough to come here to address us. This is one of the most important factors in a discussion of our subject. I have had considerable experience up to this time. My time is not going to be very long, and I am afraid I am not going to see the results of this excellent work of radium therapy. Were there time, I would be the first to subscribe to that type of treatment. A carcinoma patient treated as was shown by Dr. Cutler would probably live for five years. If that could be done we certainly would be very glad to have the radiologist take over the work of the surgeon. For with all the improvement in the work of the surgeon there is no comparison to the results from x-ray or radium. You can see because it is squamous cell carcinoma of the larynx and it disappeared promptly. I am looking forward to the perfection of radiotherapy. At the same time I wish to state definitely that until the x-ray and radium experts can show what the surgeons can show in cancer of the larynx, we must continue to operate on these cases, best by the laryngofissure method and eventually by laryngectomy.

Dr. Thomas C. Galloway, Evanston: The best figures for irradiation in cancer of the larynx appear to be those of Coutard showing about 26% of five year cures and those of Harmer showing about the same result with radium locally applied or implanted. On the other hand Jackson reports 88% cures by laryngofissure in selected cases and Gluck-Sorenson from their extensive statistics slightly less. St. Clair Thompson has pointed out that this high percentage of cures holds in carcinoma of the larynx treated early by laryngofissure, with a normal airway and serviceable voice. We should, I think, hesitate to turn such early cases to

any more problematical method until time has proven its value.

Dr. M. Reese Guttman, Chicago (closing): I wish to thank all that have discussed this paper for their very kind treatment. Dr. Lederer mentions Dr. Booth's survey of the Cook County cases of malignancy, and has drawn attention to the high incidence of poor dental hygiene in association with carcinoma. I do not think this situation will apply to the better grade of private practice. One must recall that malignancy as a rule occurs in older individuals, those that are most frequently afflicted with such dental disturbances as pyorrhea and caries. Furthermore, the type that Cook County Hospital caters to shows a high incidence of dental disease. In all probability this is, at best, a minor factor in the etiology of carcinoma of the larynx.

In regard to the intrinsic and extrinsic type, it was stated very clearly that our ideas of intrinsic and extrinsic are based on a purely surgical point of view, and are not the usual customary anatomical ones. Dr. Lederer misunderstood me; it was said that over 75 per cent. of our patients were inoperable. It is the relatively infrequent case that is seen in the early operable stage.

Dr. Cutler has given us a very fine presentation of the radiologic aspects of the problem, and we are, as stated in the paper, extremely interested in the marked progress that has been observed in the fields of both x-ray and radium therapy. Only after a consistently effective technic has been evolved that produces actual results reproducible in the hands of all, can we look to radiation for the treatment of carcinoma of the larynx. The radiologist with his impressive use of the term "100,000 or more" milligram hours may create a false impression in those who are not entirely familiar with the irradiation dosage. Ten years ago when irradiation therapy with radium consisted of buried needles and radium emanation seeds such doses meant something because the radiating focus was in direct proximity to the disease area, but nowadays with the use of a radium pack at some distance from the neoplasm, the statement 100,000 mg. hours, unless qualified by the distance, by screenage and other factors, will give only a poor idea of the actual amount of irradiation that arrives to exert its biologic influence upon the neoplasm and the tumor bed. One hundred thousand milligram hours is the energy that is emitted at the source of irradiation, which may be at 6, 10, or even 15 cm. from the skin. It is vastly greater than the actual amount of energy that penetrates to the deep-lying neoplasm within the larynx. I have just returned from a clinical tour of the east and spent a great deal of time observing the work in various New York institutes. The most promising results in carcinoma of the larynx were where the Coutard technic was utilized. However, all we can say at present about the Coutard and radium pack method is that they are promising. Until statistics showing a good percentage of five year cures have been repeatedly published and confirmed with consistency, it is far better to depend upon surgery in those operable cases where the probability of a five year cure has been definitely established and universally accepted.

# CARDIAC FUNCTIONAL DIAGNOSIS

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In cardiac diagnosis, after excluding purely functional and neurogenic factors, the most essential thing to know about a heart that is beginning to manifest the effect of excessive strain, is to determine whether the heart has been working beyond the limits of its physiological strength. The prognosis and outline of treatment depends upon the results of this study.

The electrocardiogram, x-ray and stethoscope are well adapted for diagnosis of the lesion present but a heart may pass a good physical examination and yet may not be efficiently performing its function. Efforts to determine the functional capacity of the heart, however, are not entirely satisfactory, partly due to the lack of facilities to measure vascular tonus or to estimate the psychic response of the heart. It is possible to obtain a fair estimate in a crude fashion by the tests to be outlined here. The body at rest affords no opportunity for estimating the reserve force, however. Neurocardial lesions must be differentiated from myocardial and Lieb[1] suggests the following tests:

1. Trigeminal irritation by ammonia. A normal heart will remain steady but there is an acceleration in a neurotic heart.

2. Aschner's oculocardiac reflex elicited by pressure on one or both eyeballs changes the heart rhythm. The normal shows a retardation of four to ten beats. More than ten suggests cardiac functional disturbance.
neurocardial disease.

3. Atropine differentiates disturbance through the vagus nerves from muscular degeneration according to Talley, who found that an injection of 1-25 to 1-50 grain atropine increased the normal heart 30 to 40 beats but the myocardial heart is increased only 20 or less.

The literature has had many contributions on the subject of tests for cardiac function and in 1922, after a careful study of the tests then in use, Brittingham and White[2] concluded that there was no satisfactory test. Frost in the same year made the same statement but suggested a new cardiorespiratory test developed by Dwight

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and Frost but no paper was published on the new test at that time. Later it was described[3] and discussed by Herman.[4]

From 1924 to 1931 Eustis[5] published a number of articles on the test and in 1927 he[6] suggested a simplification of Frost's original technique. In 1931 he gave a resume of five years use of the test. Schmitz in 1925[7] evaluated the various heart function tests and made the significant statement that most investigators have made the error of employing the various tests as heart tests rather than as tests of the patient with heart disease. The importance of this differentiation must be emphasized. The functional capacity of the heart, responding to a given load, plus the secondary response of the general circulation and nervous system is the only method of measurement clinically useful. No single test alone is, or need be, made the criterion for an absolute functional diagnosis or prognosis.

Most of the heart functional tests are based upon changes in the circulation caused by increased muscular exertion which produces a derangement of certain qualities of the heart in which function is disturbed more readily in the damaged heart than in the normal. The physical signs and clinical symptoms indicate this change in function but not the exact level of cardiac functional efficiency.

The studies to determine this efficiency can be grouped as follows:

1. Clinical, comprising increased irregularities under exercise, variations in pulse rate, changes in the quality of the pulse, changes in heart tones and valvular tones, secondary signs of deficient function in other organs such as dyspnea, edema, ascites, hydrothorax and angina pectoris.

2. Sphygmomanometry. Arterial pressure is the basis of most forms of clinical study of cardiac reactions and various instruments have been devised to measure and record this, most of them of the Riva-Rocci[8] type or modifications and means of recording have been added in the form of sphygmotonographs and sphymographs. These readings have been put in the form of a Factor by Tigerstedt[9] as follows:

Pulse Pressure x-Pulse-rate = Velocity of circulation. Syst. Pressure x Pulse-rate = Work done by the circulation. P.P. divided by S.P. = efficiency of the heart as a pump. This is called the blood pressure coefficient by Strassburger. Normal is 25% to 35%. A factor below 20% or over 40% indicates lowered cardiac efficiency. Stone determines the cardiac load and overload factor by dividing the Pulse pressure by the Diastolic pressure, normal being approximately 50%. A very technical modification has been recorded as Tornai's[10] test and depends on the phases in the arterial tones produced by compression of the artery by a cuff. Goodman and Howell[11] also have described this phenomena.

### Variations in the Pulse Rate

a. Posture. In 1833 Donnell counted the pulse rate recumbent and erect and found in the former posture that the pulse rate was slower. Schapiro found that if the myocardium was weak this normal difference disappears or is modified. Geigel[12] found a variation above 30 indicated weakness. The psychic factor must not be overlooked in this test.

b. Exercise. Mendelsohn[13] and Graupner estimated the time necessary for a normal heart to return to its previous rate after a measured amount of work and a measure of the heart's functional capacity would be shown by the lengthening of this time. The greater the amount of work done with return in 2-3 minutes to the normal, the greater is the heart capacity. Selig[14] used stair climbing as a modification of the Mendelsohn test and further modifications are the hopping test prescribed by the Aeronautics Branch of the U. S. Department of Commerce, the knee or trunk bending or the running step of Lian. Hertz's[15] test consisting of alternately flexing and extending one forearm and at the same time resisting his own movements will slow the pulse in muscular heart affection. In a recent volume on heart disease, Paul Dudley White often refers to the fact that the heart does more work in a recumbent position than when erect. In a fairly recent article, Grollman (The Effect of Variation in Posture on the Output of the Human Heart, Am. J. Physiol. 86: 285, 1928), after reviewing the literature on the subject, gives a summary on the basis of his own investigations in which he says: "The circulatory minute volumes of a series of normal men and women were determined in the recumbent, sitting and erect postures. Contrary to the findings of previous investigators, the results show that the circulatory minute volume is maintained constant despite variations in posture." The effect of posture on the respiratory mechanism is pointed out, and it is shown that

homogeneous mixture in a lung bag system is less easily obtained in the recumbent than in the standing posture. Certain physiological implications involved in the conception of a constancy in the circulatory minute volume with varying posture is discussed. In previous and suceeeding issues of the American Journal of Physiology the same author discusses various aspects of cardiac output in different physiological states, e. g.; after fluid intake and during menstruation. From this brief description it will be seen that this type of test can be subject of countless modifications in technique. Sobolowski found Katzenstein's method reliable for determining the ability of the heart to stand general anesthesia. The patient has to lie down, and the physician compresses with the three middle fingers of each hand the femoral arteries directly at the inguinal ligament. The pulse is counted before and after complete compression for two minutes without releasing the pressure. If the second count is equal to or lower than the first, the heart energy is good. Increase up to six beats per minute indicates a weakened heart, but still capable of compensation. General anesthesia is contraindicated if the difference is eight beats or more. Determination of the blood pressure before and during the compression—originally required in Katzenstein—is not essential.

4. Variations in Blood Pressure.

(a) Posture. Changes in posture produce changes in auscultatory blood pressure readings, in systolic, diastolic and pulse pressure. Normally the systolic pressure increases from recumbent to standing but in damaged hearts it remains the same or is decreased. The diastolic rises from sitting to standing normally but falls if there is deficient tone, while the pulse pressure falls on change from sitting to standing.

(b) Exercise. The tests are virtually the same as recorded under changes in pulse rate. On exercise, such as the stair climbing test of Selig or Hertz's[16] gymnastic resistance test, the normal change in blood pressure should be not more than 10-15 mm, but in damaged hearts may reach 20-30 mm. Katzenstein's[17] test of compressing digitally or by an Esmarch bandage for 2 or 2½ minutes both iliac arteries, recording the blood pressure and pulse rate. Normally the blood pressure rises and pulse rate drops. In adequate hypertrophied hearts the blood pressure rises 15-40 mm and pulse rate remains the same or falls. In early damage the blood pressure remains unchanged while the pulse rate increases. In cardiac failure the blood pressure falls but the pulse rate increases considerably.

(c) Barringer's[18] Test depending on the increased $CO_2$ content of the blood on exercise or work stimulating the nerve centers controlling the suprarenals with resulting constriction of the splanchnic vessels causes a rise in blood pressure. On rest this process is reversed and the blood pressure falls again in a normal heart. However, in a damaged heart the mechanism is changed so that the lowered aortic pressure causes an expulsion of the residual blood in the heart and the pressure rises again briefly, and this delayed rise in blood pressure after cessation of muscular work is the significant point in Barringer's test. If the systolic blood pressure reaches its greatest height not immediately after work but ½ to 3 min. later it shows lowered efficiency.

5. Russian or Breath Holding Tests. Normal individuals can hold the breath in inspiration from 40 to 70 seconds and in expiration 20 to 35 seconds. In lesions of the heart this ration $\frac{40\text{-}70}{20\text{-}35}$, is preserved though the periods are shortened, and this will serve to differentiate bronchial asthma where the ratio is reversed. Voluntary apnea will have a definite time in a normal heart but a cardiac insufficiency shortens the time, according to Cooper.[19]

6. Vital capacity. It has long been known that the volume of the greatest possible expiration after the deepest inspiration is decreased below normal in patients with cardiac lesions. A quantitative test of the pulmonary engorgement and indirectly of the functional condition and reserve power of the heart can be inferred from vital capacity readings. Peabody and Wentworth[20] called attention to the relationship between the vital capacity and the clinical condition of cardiac compensation, and a table of vital capacity readings has been prepared for sex and height. A reading of 90% of this standard can be considered normal, while readings of 70 to 90% indicate partial incapacity and call for a modified regime. From 40 to 70% means more limitation of activity and below 40% the patients are decompensated to the point where bed rest is imperative. A general rule is that a reduced

vital capacity makes a cardiac dysfunction a possibility.

7. Mackenzie, Wells, Dewis and Ylvisaker[21] recently devised in the Medical Department of the Prudential Life Ins. Co. a combination test called the flarimeter test, being an ingenious combination of the step test, cardiorespiratory test, and breath holding test after exercise. The best criticism of the test is that it is too complicated for general clinical use.

8. Cardiorespiratory test. This test was developed by Eustis.[22] The systolic and diastolic pressure is taken auscultatory with the patient seated, the pulse rate being counted at the same time by auscultation over the brachial artery. The pressure is then released and the patient told to take a full inspiration and then expire through a spirometer, keeping the pressure uniform at 20 mm of mercury. The systolic pressure is taken before the patient inhales, and after completion of the exhalations. Without releasing the pressure in the cuff the needle of the spirometer is turned to zero, the systolic pressure again taken. A normal response results in an increase in systolic pressure after the third expiration of from 30 to 40 mm. A failure to respond denotes a weakened heart muscle. A fall in the inspiration systolic pressure means a great dilation of the heart. This test has shown correspondences to the clinical evidence of the functional capacity of the heart.

9. Mental Concentration. Erb's test consists in placing the subject perfectly at ease. A mental concentration on the pulse in a normal individual causes practically no change, but in a cardiac case there may be found a moderate or marked slowing of the pulse.

Conclusions:

1. No fixed method should be adopted in estimating the heart's function but the tests should be fitted to the individual case.

2. The only practical standard of measurement to determine is to what extent the heart's response to effort is curtailed.

3. Tests should be repeated and results averaged.

4. The personal factor must not be overlooked in interpreting results. The heart is the individual's own organ and must suit his needs, not some instrument's.

5. Estimation of functional efficiency of the heart tries to determine only how much physical exertion the patient is capable of performing, whether he is able to stand the strain and stress of his occupation and respond to the stimulus of his environment. Wallenberg states[23] that the more trivial the cause leading to decompensation the more advanced the cardiac disease. A constant relation between cause and effect does not exist but several factors have to coincide. In patients who have experienced several decompensations a slight increase in their work or other obligation suffices.

6. Common sense is needed in interpretation of any test, as the cardiac strength varies with the time of day, before or after food, before or after rest, and the presence of habits or mental worries all have an important bearing.

7. The best functional test we have at present is the patient himself and a thorough study of the history, symptoms, physical examination and laboratory tests will be of more aid in estimating the functional capacity of the heart than all the tests combined.

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## DISCUSSION

Dr. Don C. Sutton (Chicago): I am reminded of a clinic I attended of Dr. Preble's as a senior medical student. He presented a man with a very extensive aortic insufficiency who offered this story; that for a number of years his regular daily labor had been that of swinging a twelve pound sledge; he was shifted to a six pound sledge, and he could still do a full day's work, but that he found himself completely unable to walk up one flight of stairs.

That seems to me to be the secret of functional tests. That is, most of the tests that have been devised for the study of cardiac functions are artificial, and after

all, the individual can continue in moderation doing the things he has been used to doing, and give much better evidence of his cardiac efficiency than by some artificial test.

In our cardiac follow up clinic at the county hospital where admissions now have reached beyond 9,000, we have had many interesting experiences, because these individuals are that border line group that have to labor daily in order to have their daily bread. Therefore, the first question they ask is, "Can I go to work? Can I do my job?"

The consequence is, we have had some surprises in what men can do. I would like to give just two illustrations. One, a man of thirty-five, entered the hospital with a rheumatic heart disease, fibrillation, and a very marked decompensation. After leaving the hospital moderately well compensated he came to the clinic for a few times and announced he was returning to his job, which was that of an iron molder, and he and a partner had to lift several times during the night a 300 pound molding, several feet high.

He continued on that job for three years, although he had an enormously enlarged heart, a well developed mitral disease and fibrillated during the entire time.

Another man of forty-five, with a similar lesion got a job in a store room where it was necessary for him to lift from a traveling belt a sixty pound firkin of butter to a truck. This was a continuous job lasting for eight hours, and he continued on that job for something like three years before he decompensated.

So that the mere examination of the patient gives us very little information as to what that patient can do.

Do not misunderstand that I advise patients to go to the extent that these two did that I have illustrated, but, after all, it seems to me the most important idea of a functional capacity of a heart is what that heart does for that particular individual.

And if his heart does the work he expects of it without fatigue, without dyspnea, and without edema, he has a satisfactory function. That if any of those are present, then his function is not sufficient for what he is expecting of it.

I want in conclusion to congratulate Dr. Meixner on his idea also that after all the best functional test of the heart is what it does for that patient.

Dr. Meixner: There are just two other minor points. In the first place, the relation of cardiac function to annual health examinations.

Annual health examinations are getting to be more and more relied upon and the patient comes to you and says, "How about my heart? Is it good? Will it last? How long will it last?" The annual health examination offers a wonderful opportunity to study cardiacs and particularly the response of that particular patient to the work he has to do, and if there are no other reasons for annual health examinations the observation of the heart after the age of forty would be plenty of justification.

And the second, cardiac function is the important thing in the patient's mind when he consults you, rather than physical findings or laboratory facts.

## FETAL PERITONITIS IN A PREMATURE INFANT: OPERATION AND RECOVERY

GEORGE L. DAVENPORT, M. D., AND SAMUEL L. GOLDBERG, M. D., M. S., (IN SURG.)

CHICAGO

Fetal peritonitis is an uncommon condition. In a complete review of the literature, Abt[1] found 85 reported cases. The large majority of these were found at necropsy. In some few instances diagnosis was made early and surgical intervention undertaken, but only one patient was known to survive (Peiser, 1918).[2] A search of the subsequent literature has failed to reveal another. For this reason we deemed it advisable to record our case. The patient is alive following surgery done to correct intestinal obstruction by bands of adhesions caused by a fetal peritonitis.

Baby William P. was admitted to the service of Dr. A. Levinson at the Premature Station of Sarah Morris Hospital at 3 A. M. on January 2, 1933. It had been born two hours previously, the third child of a colored woman of 21, following an uneventful 7½ month pregnancy and a cephalic precipitate delivery. Its condition on admission was "fair"; it was cold, the temperature did not register on a thermometer, its cry was weak and its color pale. It weighed 2335 grams, and physical examination was essentially negative. Except for a trace of albuminuria, routine laboratory tests showed results within normal limits. Wassermann tests on the blood of mother and child were negative. Incubator heat and careful care improved the infant's condition within a few hours, the temperature rose to normal, it appeared stronger, and took feedings well.

At noon on the first day, the child vomited a small amount of "green mucus". This was repeated several times during that afternoon and evening. Several stools were passed, entirely meconium. Vomiting continued the following day, January 3, the vomitus becoming bile colored, and slight abdominal distension was first noticed. A small enema gave no results or relief. The condition became more marked the following day, the stools continued to be entirely meconium. To combat dehydration 50 c.c. of 5% glucose in physiologic saline solution was given subcutaneously. That afternoon a thin barium suspension was given by mouth to con-

From the Surgical Services of Michael Reese Hospital, Chicago.

firm and localize the intestinal obstruction that the clinical picture led us to believe was present.

The x-ray report (Dr. R. A. Arens) read, "Films taken immediately after barium meal and 2 and 18 hours later show dilatation of the small intestine, with partial obstruction, so that at 18 hours there is still a considerable part of the barium meal in the small intestine and some in the stomach. The impression is that of partial obstruction, due either to atresia or bands, in the jejunum, about 10 to 15 centimeters distal to the ligament of Treitz." (Fig. 1).

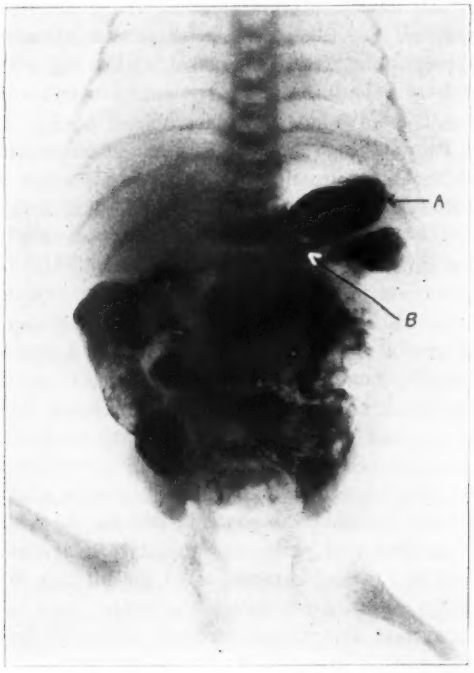


Fig. 1. Roentgenogram 18 hours after ingestion of barium meal showing (A) gastric retention and (B) obstruction probably in jejunum.

We saw the child in consultation. The abdomen was distended markedly; peristaltic waves were visible. Rectal examination was negative. Exploration was agreed upon. Preparation consisted of repeated gastric lavage and subcutaneous injections of 5% glucose in physiologic saline solution to obtain a better fluid balance.

The abdomen was opened, under drop ether anesthesia, through the mid-line, from xyphoid to umbilicus. Coils of distended small bowel immediately presented themselves. The serosal surfaces were everywhere dull and in places covered with shaggy fibrin deposits. Blood vessels were prominent, and even careful handling caused subserosal hemorrhages. There was a small amount of free, straw-colored fluid, smears of which showed no organisms. The mesenteric lymph nodes were everywhere enlarged, in some areas confluent, but for the most part discrete. Adhesions between loops of bowel were filmy and separated readily except in two areas. Between the jejunum and the parietal peritoneum of the left upper quadrant there was a band about three millimeters wide which was quite difficult to separate. The jejunum at the point of attachment was dark grey and necrotic looking, but no actual perforation could be demonstrated. The area was inverted with several fine silk Lembert sutures. A similar band between the terminal ileum and the parietal peritoneum was also divided. The gall bladder and appendix were visualized and appeared normal. There was no Meckel's diverticulum or any other abnormality of the gastrointestinal tract.

Much of the distension was relieved during the operative procedure. Closure was in layers, using fine plain catgut throughout, without drainage. The suture line was reenforced with 3 black silk tension sutures. In spite of the 45 minutes of anesthesia, the child left the operating room in fairly good condition, its color and pulse were good and its skin warm.

The post-operative course was strangely uneventful. The maximum temperature was 102° rectally, the first day. Regurgitation of small amounts of fluid took place on only 2 occasions immediately after awakening from the anesthetic. Ten c.c. of father's blood and 10 c.c. of 10% glucose solution were given intramuscularly that afternoon and repeated that night. Forty c.c. of physiologic saline solution was given subcutaneously at 8 hour intervals. Eight hours after operation, the infant passed a fair sized stool, and 2 hours later passed a large stool; with practically complete relief of the abdominal distension. Following this breast milk feedings of 4 c.c. were started and gradually increased, supplementing the fluid intake with glucose and saline solutions for 2 days; when sufficient fluids were taken by mouth.

A slight serous, then purulent discharge from the lower angle of the wound which persisted a few days, was the only untoward event in an otherwise uneventful convalescence. Sutures were removed on the 11th day. On the 29th post-

operative day the child was dismissed from the hospital in excellent condition. Its weight was 2440 grams, the minimum had been 2200 grams.

*Comment.* Successful laparotomies on infants are not uncommon, but the success of an operation for intestinal obstruction in a few days old premature infant is worthy of note.

The diagnosis of intestinal obstruction was not difficult. Persistent vomiting, distension, visible peristalsis and obstipation made exploration imperative. X-ray visualization of distended loops of small bowel and 18 hours gastric retention verified this, and the localization of the obstruction by the x-ray was excellent.

Probably the inflammatory element of the fetal peritonitis was in abeyance at the time of surgical interference. Grossly there was no doubt of the existence of peritonitis, though study of the smears revealed no organisms. Probably the infant had developed enough immunity to entirely control the infection. The obstruction of the small bowel by adhesions with the resulting vomiting and toxemia was the most important element. Early diagnosis and pre-operative hydration with saline and glucose solutions to combat toxemia and prepare the child for surgery were important factors in the good result.

Drop ether was well taken. It was used in preference to regional block or infiltration anesthesia because of its slight stimulating effect, and because relaxation was necessary to cope with the anticipated difficulty from distended loops of bowel during exploration and closure.

Post-operative care was an important factor. Much credit must be given to Miss Lundeen and her associates in the pre-mature station of Sarah Morris Hospital for excellent care and co-operation.

Abt believes that fetal peritonitis is not always infectious and that its occurrence depends in a large part upon intestinal perforations which permit the escape of meconium into the peritoneal cavity causing inflammatory reactions and adhesions. No perforation could be demonstrated in this instance, though it may have been present at a previous time and become agglutinated. Possibly this peritonitis was hematogenous in origin, belonging to the smaller group caused by actual infectious agents passing through the placenta.

Congenital gastrointestinal abnormalities were not present. These have been mentioned repeatedly in necropsy reports of cases of fetal peritonitis in the literature.

On February 1, 1934, when the child was last seen at the out-patient department, it was in excellent condition; its weight was 18 pounds, 14 ounces. Up to the present time it has had no gastrointestinal trouble whatsoever.

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# FOLLICULIN-CYST OF THE OVARY PRESENTING SYMPTOMS OF PREGNANCY

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In America and Germany studies have been made of the functional processes in the uterus and ovary, and anatomical findings have elucidated the functional inter-relationships between the two organs. It is by means of its hormones that the ovary exerts its influence over the uterus. Anatomical and clinical knowledge of the processes involved may be deepened by chemical studies on the hormones.

The uterus may respond to the ovarian influence by means of amenorrhea or hemorrhage. The two symptoms seem to be contradictory but both may be induced by the same functional process. An amenorrhea may go over into a hemorrhage. In these hormonal disturbances it may not be merely a question of a paucity or absence of hormone, but of an over-production.

Under the stimulus of the anterior lobe of the hypophysis, the ovary produces folliculin and lutein.

*Folliculin-effect:* Up to the time of puberty the mucosa of the uterus is a thin membrane with only a few glands. This mucosa comes under the hormonal influence of the first follicle which begins to ripen. In the fourteen days required for the ripening of the follicle, the uterine mucosa develops to several times its original thickness (Fig. 1); this is called the stage of proliferation. After the follicle has ruptured and become changed over into the corpus luteum, the proliferative processes in the uterine mucosa cease and its glands begin to secrete; the proliferation phase goes over into the phase of secre-

tory activity. It is thus that the embedding of the developing ovum in the uterine mucosa is rendered possible. If the ovum has not become fertilized, we have to do with a merely sterile functional process; the corpus luteum regresses. The hypertrophied endometrium is capable of living only so long as it remains under hormonal influence, either folliculin or lutein. With regression of the corpus luteum, hormonal influence ceases and the endometrium dies and is thrown off.

When the follicle does not rupture and the production of the folliculin continues, the growth-impulse of the endometrium remains in effect, and the endometrium goes on growing in thickness. The growth-impulse also persists in

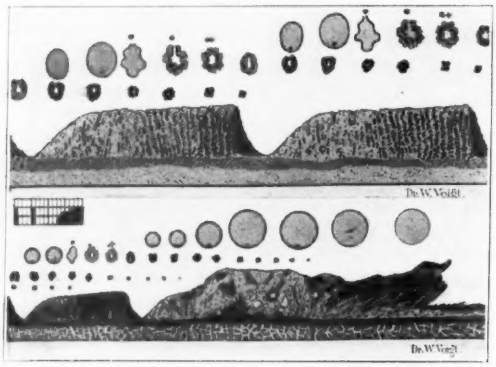

Fig. 1. (Above). The normal menstrual cycle.
Fig. 2. (Below.) Glandular cystic hypertrophy of the endometrium.

the uterine musculature which goes on developing in thickness, but the intrauterine cavity does not, as in the case of pregnancy, gain in size, since diminished tonus of the musculature as seen in early pregnancies does not occur. The resulting crowding of the intrauterine space leads to pressure on the thickened mucosa (Figs. 2, 3), necrosis and bleeding. Parts of the mucosa are cast off, but these are replaced by the proliferation of the remaining mucosa, stimulated by the continued production of folliculin. Consequently, there will be observed the clinical picture of an amenorrhea of perhaps five weeks to three months' duration, changing to one of irregular periods of bleeding. The amenorrhea may lead to the diagnosis of pregnancy, especially tubal pregnancy. The fact is that the clinical picture of hyper-folliculinism is one of enlarged uterus, livid discoloration of the cervix and vagina, and eventually an adnexal tumor.

A corpus luteum cyst may produce findings of pregnancy just as well as a folliculin cyst. A case of this kind was described by Halban, and another by Wagner and Pizschek. In order to know what is to be expected in cases of overproduction of lutein, it is essential that the

Fig. 3. Glandular cystic hypertrophy of the endometrium.

function of the corpus luteum be understood. The ripened follicle ruptures, the ovum begins its wanderings in expectation of being fertilized. The ruptured follicle now suffers regressive changes, its residual germinal epithelium—the granulosa cells—developing into a gland of internal secretion, namely, the corpus luteum. The corpus luteum remains active for a certain time. During this period the ovum either dies or is fertilized and develops to the point where it is capable of further independent growth. The effect of the hormone of the corpus luteum is to change the phase of proliferation into that of secretion. This phase is characterized by the development of dilated, sinous, tubular glands, in the cells of which mitoses are absent. The corpus luteum hormone itself exerts no influence on the growth of the uterus; its effects are limited to the endometrium. It is only effective when superimposed upon the effects of the fol-

liculin. Lutein permits the pregnancy to continue, in that it nullifies the effect of the pituitrin and thus saves the uterine contents from being subjected to the uterine contraction-producing effects of the pituitary gland. It also prevents further ovulation. When the corpus luteum is extirpated, the secretion of milk ceases.

When fertilization of the ovum does not occur and the corpus luteum is retained and undergoes further development, the mucosa is not thrown off as in the menstrual period since it is still under the influence of the hormone; the menses do not occur and the mucosa continues in the secretion phase. There is amenorrhea, but in these cases bleeding does not develop. Incurs only with the act of mating. In the female rabbit, the hypophysis has been removed one hour after she has been covered by the male, and yet the amount of anterior lobe hormone already given has been sufficient to effectuate ovulation and luteinization.

In the folliculin cysts, the production of folliculin continues until internal pressure in the cyst becomes so great that the granulosa atrophies. The changes in the endometrium go hand in hand with the folliculin production.

## DISCUSSION

*Case 1.* The case here reported from St. Joseph's Hospital is that of a woman, twenty-six years old, who gave birth to a child in mid-November, 1933. The

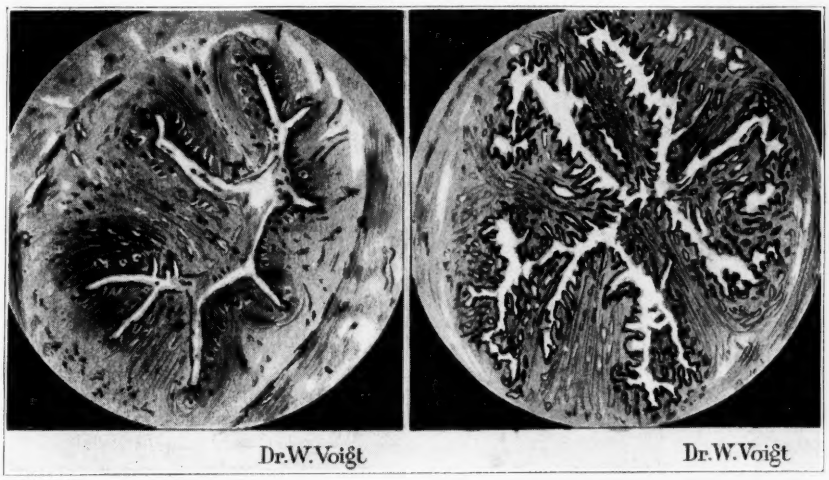


Fig. 4. (Left.) Endometrium of a rabbit treated with folliculin, showing stage of proliferation.

Fig. 5. (Right.) Endometrium of a rabbit treated with lutein.

dubitable cases of this character have been observed. However, even in these cases menorrhagia or metrorrhagia is frequently observed. This is explained as follows: Corpus luteum cysts as a rule do not contain pure lutein; there is present in addition folliculin in varying amounts. Where the lutein predominates there is amenorrhea; where the folliculin predominates there is bleeding.

What causes the development of ovarian cysts? As a rule, they result from a functional failure of the anterior lobe of the hypophysis which does not, in these cases, produce sufficient hormone to effectuate ovulation. At least, we know from studies on the rabbit that enormous amounts of anterior hypophyseal lobe hormone are produced preceding ovulation. In rabbits, ovulation oc-

course of the labor itself was normal, but with the expulsion of the placenta there was considerable bleeding despite a satisfactorily contracted uterus. The bleeding was controlled with difficulty. This incident was remarkable in itself and may have had some significance in the later development of the case since the cyst which was later removed at operation, contained folliculin which tends to inhibit blood-coagulation. Perhaps the tumor was already present in its incipiency. No tear of the cervix or other birth injury was present. The bleeding came from the cavity of the uterus; apparently coagulation was not entirely normal. Early in January, 1934, seven weeks after delivery, the patient consulted the writer with typical symptoms of appendicitis. The diagnosis was certain and was substantiated by the subsequent operation, but due to the recent accouchement and the not overly severe attack, a twenty-four hour expectant period was decided upon. After this period, the symptoms had somewhat abated, so operation was deferred. The patient reported a men-

struation during mid-January. In mid-February she returned, stating that she had had no further bleeding since the middle of January and believed that she was pregnant.

The findings at this time were as follows: Breasts somewhat enlarged and firm; there was no colostrum. There was no pain on pressure over the right lower quadrant. The vulva, introitus vaginae and cervix were livid. The uterus was soft, the size of a gravidity of approximately three months. Hegar sign was positive. In the region of the right ovary a tensely elastic, fluctuating tumor was felt.

The diagnosis was "folliculin cyst of the ovary," not pregnancy. The patient was told that this probably was the reason for the obstinate bleeding at the time of delivery. This diagnosis seemed so absurd to the patient that she consulted a number of other physicians. The diagnoses are interesting: Firstly, pregnancy; secondly, tubal pregnancy, and thirdly, pregnancy with concurrent omental-appendiceal abscess. The last diagnosis was apparently supported by the leucocyte count of 13,000.

The diagnosis of folliculin cyst was based on the following considerations: While, of course, it could not be ruled out, pregnancy is not very likely to occur in a woman after child-birth, who up to four weeks previously had been suckling her child. It would be easier to believe that the condition was induced by the mass in the pelvis, which consequently would not be a simple serous cyst but one containing folliculin. The diagnosis of omental abscess was rejected because of the palpatory findings on the tumor mass itself, which had an elastic, tense, fluctuant feel, and because of its evident connection with the adnexa. It was believed that the recent attack of acute appendicitis would satisfactorily explain the leucocyte count of 13,000. In addition, there was present a chronic irritative condition which would tend to maintain the leucocytosis. The bleeding in mid-January was considered to be not a true menstrual period but a hemorrhage such as occurs characteristically in the mucosal hyperplasias resulting from a persisting follicle. Further bleeding did not occur because the endometrium which had become necrotic and cast off with resultant bleeding, was not yet replaced. Tubal pregnancy was excluded because the pelvic mass was too hard and elastic. This exclusion was further supported by the negative results of the Aschheim-Zondek test.

The patient finally consented to an operation, which was performed at St. Joseph's Hospital on February 20. The findings substantiated the pre-operative assumption of the presence of a cystic tumor and of a subacute appendicitis. The walls of the appendix were thickened, the mesenteriolum obliterated, the appendix adherent to the cecum in a solid mass. The cyst was larger than a hen's egg. The ovary with the cyst and the appendix were removed. The patient made an uneventful recovery, the symptoms of pregnancy promptly disappearing.

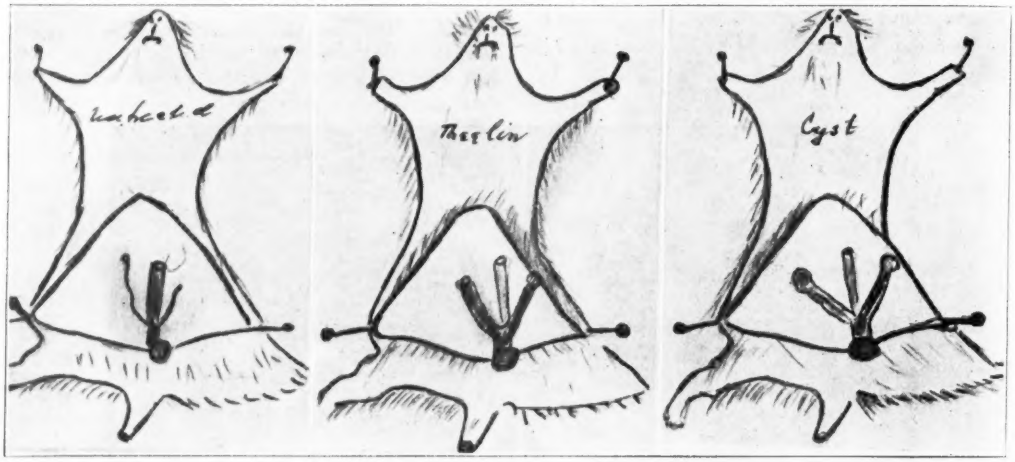


Fig. 6. (Left.) Untreated juvenile mouse used as control.
Fig. 7. (Center.) Juvenile mouse injected with theelin.
Fig. 8. (Right.) Juvenile mouse injected with contents of the cyst.

Injection of the contents of the cyst into young mice produced enlargement of the uterus in a manner characteristic of folliculin. The photograph (Fig. 6) shows a normal juvenile mouse used as a control. The horns of its uterus are delicate thread-like structures. Figures 7, 8, show a mouse from the same litter into which theelin injections were made and also the one into which the cyst content was injected. The manifestations produced by the injection of the cyst content were similar to those produced by injections of commercial folliculin (theelin). Prolan (ovarian blood points) was also present. The prolan probably arose from the placenta and was stored in the cyst. Lutein could not be demonstrated.

## DISCUSSION

Perhaps a brief discussion of the hormone content of the cysts and solid tumors of the ovary would not be out of place here. Investigators in the Berlin Clinic found that in the tumors of the ovary complicated by pregnancy, the tumor always contained prolan B and ovarian hormone. The Aschheim-Zondek pregnancy test on the urine of these women was always positive. In our case the test was negative. The hormone content of these tumors is not produced by the tumor itself, that is, it is a secondary event; the placenta, the great producer of hormone, saturates the surrounding structures with its secretory products. Thus, these products reach the tumor and the peritoneum secondarily.

How long this hormone will remain stored in the tissues of the tumor after the pregnancy has terminated is uncertain; apparently, however, it is discharged from the tumor tissues but slowly, so that frequently a positive pregnancy-test may be maintained from the hormone-reservoir in the tumor tissues for a long time.

The discussion began with the assertion that overproduction of the sex-hormone will lead to reaction on the part of the uterus, resulting in amenorrhea or hemorrhage or even in the symptoms of pregnancy. Thus, a persistent follicle may maintain bleeding for weeks, rebellious to all treatment. This hemorrhage ceases with the removal of the cyst. The rupturing of the cyst under light anesthesia, as recommended by others, seems to the writer too daring because of the peritoneal shock which may result. There is certainly much to be studied on this subject.

In cases of gynecological bleeding the greatest prudence and exactitude in diagnosis is demanded. It is now necessary to view the climacterium in a different light. Under the term climacterium is included the development of irregularities in the menstrual periods, vasomotor and nerve disturbances, and changes in the genitalia. Therapeutic results are not always clear; frequently ovarian hormone is successful, again, frequently not. This is due apparently to the different stages of the climacterium, which in their varying symptom-complexes are not sufficiently considered. We are able to distinguish three stages of the climacterium: firstly, overproduction of folliculin with enlargement of the uterus and amenorrhea or hemorrhage, but without nervous symptoms. Secondly, cessation of folliculin production. The uterus becomes smaller and harder and vasomotor and nervous manifestations appear. Thirdly, the ovary no longer functions, vasomotor symptoms disappear, and the uterus becomes small. At this time prolan appears in the urine since the ovary no longer exerts an inhibitory influence on the hypophysis.

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# CYST OF THE EPIGLOTTIS AND OTHER LARYNGEAL CYSTS

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JOLIET, ILL.

Cysts of the epiglottis are the most numerous of the laryngeal cysts. Chamberlain[1] quotes Moure who collected 117 cases, 50 of which were epiglottic. Almost any portion of the larynx may be attacked. Moure's study shows the true cords to be the next most frequent site. The ventricles, ventricular bands and aryepiglottic folds are also comparatively often the site of cystic growths.

An idea as to the frequency of laryngeal cysts may be obtained from Cavenagh[2] who in 1931 cites Leto's recent addition of 47 cases making a total of 208 cases collected out of 3000 laryngeal tumors.

Myerson[3] in 1933 gives a classification of laryngeal cysts 1. Retention cysts, 2. Congenital or embryonal cysts, 3. Lymph or blood cysts, and 4. Traumatic or implantation cysts. Several authorities had previously given classifications usually less complete than Myerson's. Charschak,[4] also in 1933, gives almost the same classification except that he adds dermoid cyst as a separate entity.

The most frequent of these is the retention cyst, usually thought to be due to inflammation of the duct of a mucous gland causing obstruction with retention of glandular secretion and progressive dilation forming a true cyst. This type is found most often on the epiglottis and on the lingual surface where the glands are numerous. It constitutes the great bulk of epiglottic cysts.

The next most numerous of the cysts is the embryonic or congenital cyst which in the past has usually resulted in death in early infancy. To the best of my knowledge very few, probably less than 5 such cases, have been successfully handled in infancy. In fact, one may go farther and say that up to the past 5 or 6 years, perhaps not a single case of congenital cyst has been definitely diagnosed in vivo during infancy. They have been diagnosed as congenital laryngeal stridor, status lymphaticus, atelectasis, some form of laryngeal tumor other than cyst, and various other labels have been attached. It has been only on

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the autopsy table that the correct diagnosis was revealed.

H. Marx[5] of Munster, in 1928, is of the opinion that his case was the first to be correctly diagnosed during life. This patient died from descending infection following tracheotomy.

Bellocq[6] and Pernot present a case in which they made a diagnosis of congenital tumor of the ventricle, perhaps cystic. This case also died 12 days after tracheotomy and autopsy revealed an intralaryngeal cyst.

Chamberlin, in 1917, reports the case of a very young child in which a probable diagnosis of enchondroma was made. Puncture of this tumor resulted in a gush of 1-2 oz. of brownish viscid fluid and a complete cure. It seems possible that this cyst may fall into the class of lymph or blood cysts which we will discuss in a few moments. Dechard's[7] case, in 1920, is similar to Chamberlin's and is also notable for a successful result in a 7 weeks' infant after an opening with curved scissors. The contents appeared to be dark clotted blood. The pre-operative diagnosis was a sac filled with fluid, a cyst, abscess, or tumor. The post-operative diagnosis was extralaryngeal blood cyst; the location was between the larynx internally and the outer wall of the deep oropharynx externally.

The case of Lorie[8] and Lux in 1932 seems a remarkable one in that in a 4½ month's old infant a large cyst was successfully removed by thyrotomy preceded by a low tracheotomy 2 weeks earlier.

Myerson's 3 cases, all congenital, are very interesting and valuable to study. His first case was seen at 2 days of age and the cyst incised under direct laryngoscopy giving egress to a quantity of thick glairy mucus. The inspiratory stridor returned after 48 hours and the infant died of bronchopneumonia at the age of 24 days. The other 2 cases were each 3 years of age. One recovered after removal of a cyst by thyrotomy and the other died after apparently making a good recovery. Death was due to a granuloma forming some days after thyrotomy.

Chamberlin and Decherd's cases seem to belong to the class of lymph or blood cysts though they may also be congenital. Several points favor this view. Both cases were cured by simple incision. The contents in Decherd's case appeared to be dark clotted blood, in fact, he diagnosed the case post-operatively as a blood cyst. Chamberlin's was very flat as well might be the case in a collection of lymph or blood in a dilated connective tissue space without an epithelial lining; and after puncture not a sign of a cyst remained.

A retention cyst is lined internally by stratified columnar or stratified squamous epithelium with a subepithelial layer of connective tissue often rich in blood vessels. Externally we have an epithelial covering often identical with the internal epithelium. Congenital cysts often have the same histological characteristics as retention cysts in which case it is impossible to differentiate them microscopically. In some congenital cysts there is an intermixture of structures derived from endoderm and mesoderm in which case it is possible to make a microscopic differentiation between the two types.

Traumatic cysts have been reported by very few men: Glas,[9] and Dean[10] and Gregg were the only ones I could find.

Dean and Gregg give some interesting data about this type. They are due to accidental intrusion of epithelial cells into submucous or subcutaneous tissues thus making an "Acquired or Traumatic Dermoid." They are found in the skin, iris, cornea, anterior chamber, and in the anterior thoracic wall coming from the pleura.

A description of their case follows: The patient had laryngeal tuberculosis. The treatment consisted of 50% lactic acid applications and later suspension and curettage every 2 weeks. The larynx was apparently healed in 4 months and the patient discharged. She appeared for routine examination 6 months later showing a dome shaped elevation in the interarytenoid space. This was successfully removed and on section showed an outer covering of squamous epithelium nearly normal, slightly thickened in places. Below this was a small cystic process in connective tissue with a lining of squamous epithelium similar to the surface. The recovery was complete. Dean and Gregg draw the conclusion that in the case of tumors following operations on the larynx implantation cyst is to be considered.

Probably the first case of laryngeal cyst reported in this part of the country was that of W. E. Casselberry,[11] in 1891, in which he attained success after several operations including tracheotomy.

Dr. Joseph Beck, in 1909, reported a very interesting and difficult epiglottic cyst in a child 5 years old probably congenital as there was history of trouble since birth.

The child was brought to the hospital almost

asphyxiated and a stabbing tracheotomy had to be done immediately. The tumor was first thought to be a papilloma or myxoma. Six weeks later, after exposure with a Jackson speculum a cyst was opened with fixation forceps in attempting to snare it off. As much of the wall as possible was removed and the cautery was then used. It recurred after six months when it was successfully removed by pharyngotomy. It appeared to originate from the left epilaryngeal region close to the tongue. Dr. Beck thought it might be a congenital cyst of thyroglossal origin.

Time will not permit an account of many of the interesting cases such as Freudenthal's[13] four, all in tubercular patients, Imperatori's[14] case diagnosed as branchiogenetic cyst successfully removed by thyrotomy, Cavenagh's cyst of the vocal cord simulating carcinoma, and many others.

In addition to the authors mentioned here valuable articles have been written by Mayoux,[15] Adams,[16] Rosenberger,[17] Gibb,[18] G. H. McKenzie,[19] Park and Isreal,[20] Davis,[21] New,[22] and others some of whom will be referred to later in this paper. A considerable number of the listed articles on this subject I was unable to locate.

Retention cysts, as already stated, are the most numerous of all laryngeal cysts and usually occur on the lingual surface of the epiglottis. They occur more commonly in the adult than in children. Chevalier Jackson[24] had seen 35 cases of laryngeal cyst up to 1930 of which 23 sprang from the epiglottis. He advocates entire removal of the sac by direct laryngoscopy whether the growth be large or small.

Taylor's[23] case of epiglottic cyst is interesting as regards symptomotology and especially because the alarming symptoms continued after the cyst was removed. The cyst, 1½ cm. in diameter, was on the lingual surface and right lateral border of the epiglottis crowding the latter posteriorly and to the left.

The symptoms were severe nocturnal choking spells, the patient waking out of a sound sleep with the sensation that he was being strangled. The symptoms continued after total removal of the cyst and proved to be due to the flabby atrophic condition of the epiglottis resulting from the prolonged pressure of the cyst. This allowed it to fall back and produce almost complete obstruction to inspiration. This symptom was entirely relieved by amputation of the upper half of the epiglottis.

In my patient the location of the cyst was very similar to that of Taylor's case. To be more exact it was on the lingual surface of the epiglottis extending along the right lateral border being secured by a rather extensive pedicle extending down into the right pharyngoepiglottic fold. Its shape was ovoid, three fourths of an inch long and ½ inch wide at its greatest diameter. It was pale yellow in color with a rather thin almost translucent wall in which several branching blood vessels could be seen. The cyst was found on routine mirror examination and could afterward be readily seen on direct examination with a tongue depressor. It was quite freely movable on its pedicle which was rather extensive from side to side but quite narrow antero posteriorly.

The patient's only complaint was a feeling of something in his throat when swallowing saliva. It did not interfere with his taking food or drink.

The patient volunteered the information that several members of his family had been troubled with cysts.

The problem of removal did not seem unduly difficult though it was recognized that there might be pitfalls if the procedure was approached without sufficient preparation. The examination indicated that the patient would behave well and had a very tolerant throat. In my opinion the best procedure was to remove the cyst in toto by dividing its pedicle thus separating it from the epiglottis. This would leave a narrow raw surface which would heal rather quickly.

The question of instruments came up next. Neither the Jackson nor any of the Haslinger instruments appealed to me because of the small working space they permitted. I thought of suspension or merely using an old fashioned Pynchon tongue depressor. I spoke of this to Dr. John Cavanaugh[25] who advised me to use the old type tongue depressor with the long handle.

The patient was given a preliminary hypodermic of morphine and atropine and the pharynx and larynx thoroughly anesthetized with cocaine and adrenalin. While still in the sitting position a linen traction or guide suture was placed in the epiglottis. It had been my intention then to finish the procedure on the operating table, but with the efficient Pynchon tongue de-

pressor and the traction suture the exposure was so good, I determined to go ahead in the sitting position. An edge of the pedicle was grasped with a 10-inch tissue forceps and an incision made with the Boettcher tonsil scissors through this edge of the pedicle thus beginning to dissect the cyst and part of its pedicle from the epiglottis. The dissection was thus continued, the severance being completed by cutting through the pedicle where it was attached to the right pharyngo-epiglottic fold.

The pathological report submitted by Dr. W. Henry Wilson was as follows: A small cyst: flat spheroid, about ½ inch, reddish yellow, contents soft butter-like material, of a reddish brown color, odor of feces. Contains a number of small fatty globules. One crystal of cholesterol seen; negative to Sudan III and negative to tests for cholesterol. No formed substance of any sort. Wall made up of 3 layers; outer squamous, middle of mature connective tissue, and a lining of squamous epithelium.

The following conclusions are drawn:

Congenital cysts have been responsible for some deaths from asphyxia in early infancy. In the past they were seldom diagnosed in life.

The laryngologist when confronted with an infant with embarrassed respiration, particularly with inspiratory stridor, should think of congenital cyst of the larynx.

Congenital cyst in early infancy demands all the skill and resourcefulness of an experienced laryngologist to secure a successful outcome and may prove fatal even with the very best management.

Lymph or blood cysts will sometimes yield to simple puncture.

Retention cysts where possible should be removed intact. If this is not possible endoscopically it may have to be done by external operation.

Implantation cysts are excessively rare; only two are reported in the literature.

The usual epiglottic cyst may often be removed in toto by endoscopy.

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## DISCUSSION

Dr. H. L. Ford, Champaign: The subject of epiglottic cysts is certainly not a familiar one to most of us, and I am frank to confess that until Myerson's recent report in the September, 1933, issue of the Archives of Otolaryngology, I do not recall ever having read or heard anything about their occurrence per se. Now I suppose I shall look for the rest of my life for one of these rather rare things, at the same time hoping that the patient will be an obliging adult and develop an epiglottic variety with a long pedicle, rather than fall heir to a congenital intra-laryngeal cyst in an infant, necessitating tracheotomy, thyreotomy and fissure, with the postmortem showing a secondary implantation granulomatous mass in the trachea, as was Myerson's good fortune in one of his three congenital cases.

However, cysts do occur more frequently than textbooks and current literature would indicate. From the records, however, as Dr. Woodruff has cited, most are of the type known as retention cysts due to closure of the glandular duct, although embryonal or congenital cysts containing both endodermal and mesodermal structures, as well as blood, traumatic or implantation cysts may occur. The embryonal cyst is probably caused by a pinching off of the appendix of the ventricle. The differentiation between an embryonal and retention cyst may hinge only on the presence or absence of mesodermal tissue, as the form, size, epithelium lining, or location are not significant of either type. The cysts occur at all ages, usually sessile, varying in size from a pin head to a large hen's egg, the smaller ones generally on the vocal cords and the larger ones attached

to the epiglottis. They may grow so rapidly as to produce an acute condition, or simulate a foreign body. Symptoms will depend mainly upon the size and location of the cyst. Mason, reporting two cases, says: "The patient is nearly always a nerovus old person, who has already diagnosed the case as cancer in the worst form, and the extremely movable growth flapping around in one's larynx with every respiratory effort or act of deglutition does not tend to allay nervousness or make our already difficult examination easier."

The foreign body sensation, with the patient pointing to the tonsillar region, and a desire to clear the throat frequently, seem to be fairly constant. The presence or absence and amount of dyspnea will naturally depend upon the extent of blockage to the airway. One might visualize with little imagination a very serious complication should a cyst with a long pedicle become caught between the vocal cords on deep inspiration. The readiness with which a diagnosis is made should depend mainly upon the amount of difficulty experienced in obtaining a satisfactory study of the larynx. Direct or indirect examination will depend upon the age and the temperament of the patient. X-rays should be made. Differential diagnosis should include prolapse of the ventricle wherein the prolapsed tissue can be replaced, whereas cysts cannot be forced out of view. In infants an erroneous diagnosis of congenital stridor or enlarged thymus may be made; and in older children the diagnosis of foreign body, papilloma, asthma, or diphtheria. Dr. Woodruff is to be commended upon his careful review of the literature and upon his successful handling of his case.

Dr. M. A. Glatt, Chicago: It was indeed a pleasure to have listened to Dr. Woodruff's description of his case and to the review of the literature on cysts of the larynx. My experience is limited to three cases, one somewhat similar in origin to that described this morning, one originating from the ventricle and the third from the anterior surface and free edge of the right cord close to the anterior commissure. All were in adults. The specimens of the last two cases are in the pathologic laboratory of the Illinois Eye and Ear Infirmary. The last one was of particularly great importance because clinically it simulated a malignancy. Since the squamous epithelium of the true cord does not contain mucous glands from which a cyst can form one can easily err in the diagnosis unless a biopsy is made. While the latter procedure is not always the most ideal method of arriving at a diagnosis, we at times must resort to it when in doubt.

Dr. George Woodruff, Joliet (closing): I want to thank the discussors for their kind remarks, and Dr. Ford for emphasizing some of the things I did not bring up. In going over the literature I noticed that Dr. New in a report of three cases advocated complete removal of the cyst and cauterizing the base. There is a question in my mind as to why one should cauterize after the cyst is removed completely. Many have been treated by removal of as much as possible and then cauterizing, with good results, without troubling to remove all the cyst. In such cases I should think the cauterizing would be an aid. As Dr. Ford pointed out, in many of these cases the chief symptom is the sensation of foreign body in the throat. So far as the method of removal is concerned, that, of course, will have to vary with the individual case. You can set down no standard method, as it depends upon the size, the location, the character of the cyst, and many other factors.

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## HYPERTENSIVE HEART DISEASE

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In a paper previously published,[1] a classification of heart disease as it occurs throughout human life, was suggested. Hypertensive heart disease was not conceded a distinctive type in that classification, nor is it herewith considered a fast and unvarying clinical entity. After all, while this type of heart disorder presents a symptom-complex constant and characteristic, and occurs so frequently in the declining years of life, as to make it almost symbolic of senility, we can and do find hypertension associated with both rheumatic heart disease of youth, and cardiac syphilis of middle life. However, it is proposed here to consider hypertensive heart disease as it is most frequently encountered, with a normal heart in youth and middle age, showing symptoms and signs of progressive embarrassment under the influence of sustained hypertension.

A theoretical discussion of the etiological factors responsible for hypertension can claim no place in the subject at hand. Whether arteriosclerosis involving the arterioles particularly of the kidney is the underlying factor, or whether a sustained elevation of blood pressure be charged to vascular spasm, infections of sundry varieties, or to the influence of heredity, etc., is irrelevant. We propose to study hypertensive heart disease, grouping its more characteristic symptoms and physical expressions, its laboratory manifestations, and theorizing upon its prognosis and management.

Just as hypertension can and does exist for a varying number of years, with few if any subjective manifestations, so too are the heart symptoms of slow and insidious origin. So long as the left ventricle, which bears the brunt of the burden in elevated vascular tension, is fully com-

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petent, the individual rarely suspects an abnormal situation. With a beginning failing myocardium, however, a very definite chain of symptoms is rather rapidly and consistently built up.

It is possibly of no great moment which subjective manifestation appears earliest, and without any extensive statistical data, there must be a doubt in this regard. However, from the literature one might suspect that dyspnea deserves an early mention. Thus McMullin[2] states, "breathlessness and tachycardia are early symptoms," and again O'Hare[8] insists, "the most frequent symptom is dyspnea, which varies greatly in degree." Shortness of breath is certainly not only an early symptom of beginning myocardial embarrassment but is also one of the most constant. Its onset is insidious and is noticeable only on exertion, inconsequential exertion however, which previously has caused no distress. A suspicious and distinguishing feature of this dyspnea, which also has a rather definite prognostic import, is the matter of degree and duration. A fleeting, mild shortness of breath on moderate effort, may be consistent with a normal left ventricle, whereas a prolonged respiratory distress has very considerable significanle. Certain it is that the average individual admits respiratory discomfort early in the course of his disease.

Heart consciousness in some form or other deserves a prominent place among the early subjective symptoms of hypertensive heart disease. This may consist of an indefinite precordial distress, a tachycardia, an arrhythmia, or an irregularity. Probably, however, the most frequent and incidentally the most logical form of heart consciousness elicited in the history is that of an exaggerated or forceful beat. The individual is constantly aware of his vascular apparatus, not only during exercise, but even when at complete rest in bed. He feels his heart beat and in many instances is annoyed with pulsating carotids. If he be introspective, he may even voluntarly call attention to the pulsation in smaller vessels, even to his very fingertips.

Cough is a symptom of hypertensive heart disease which deserves early mention. Not the moist cough of pulmonary edema which appears much later, but a dry bronchial type accompanying effort. Dyspnea, heart consciousness and cough constitute a very important diagnostic triad, important because they appear early and constantly.

There is another symptom which it seems to me is underestimated and neglected, and which is entitled to considerable prominence as a subjective manifestation of hypertensive heart disease. I refer to substernal pain. This has nothing in common with the precordial distress previously mentioned. It probably has as its pathological mechanism a stretching or dilating of the aorta, hence is encountered as an effort pain. It may be severe enough to over-shadow subjectively all other early symptoms.

Hypertensive heart disease, occurring as it so frequently does in the later decades of life, is commonly complicated with a coincidental sclerosis of the coronary vessels. Furthermore, the strain on the left ventricle occasioned by prolonged hypertension calls for an increased output on the part of the coronary arteries,—wherefore the frequent association of the anginal syndrome with this type of heart disease.

Thus far we have considered only the subjective symptoms of hypertensive heart disease arising from an embarrassed left ventricle. There comes a point, however, when this embarrassment yields to failure and as a result the right ventricle proves incompetent. The incompetency of the right ventricle creates a picture so characteristic and so constant that it hardly needs description. Ushered in with an edema of the distal extremities, it spreads as a generalized anasarca. In due time, the individual body cavities show evidence of passive congestion. Thus the abdomen becomes distended, both with its enlarged liver and its rapidly accumulating fluid. The chest reveals its hydrothorax, and the individual complains of hemoptysis, the result in part of pulmonary congestion or again of distended varices.

Before passing to the physical signs of hypertensive heart disease, we might recount hurriedly the general constitutional or distal symptoms. That extracardiac causes, particularly the hypertension *per se,* are responsible for most of these manifestations is unquestionably true, and yet the failing heart must assume part of the responsibility. Thus for example, the combination of mental depression, early fatigue and nervousness so frequently encountered in hypertension

has a distinct cardiac background. They are dependent in a great measure upon an inadequate cerebral circulation. I wonder whether the same cannot be said about vertigo and even amnesia, common and annoying symptoms, occurring in the wake of this disease? The gastric upsets, particularly anorexia, belching and kindred disturbances also have a circulatory background. In contradistinction, tinnitus and visual impairments are probably entirely extracardiac, the former due to increased tension, the latter to changes in the retinal vessels.

We come now to the physical manifestations of hypertensive heart disease. Beginning again with an embarrassed but competent left ventricle, we are justified in suspecting definite physical changes. The size and configuration of the heart are affected early. By means of the orthodiagram, or the two meter plate, we find an increase in the heart's dimensions. This increase is largely in its cross-spread and more specifically is due to an enlarged left ventricle.

We are often amazed at the discovery of a very considerably enlarged left ventricle in the practical absence of subjective heart manifestations. We repeat, that so long as the left ventricle is to all purposes competent, the individual is frequently unaware of the existence of any cardiac abnormality, unless it be the important subjective manifestation of heart consciousness, or more specifically exaggerated forcefulness of his heart. Very early then, the hypertensive heart shows physical evidence of a beginning spread or enlargement downward and towards the left axilla. Shortly, over this spreading ventricle a murmur is audible. This murmur is and remains soft in quality, is systolic in time, and may be heard in the left axilla, but contrary to the organic murmur of mitral insufficiency it is rarely audible under the left scapula. Another important diagnostic feature is its disappearance or diminution on exercise, provided the left ventricle boasts of resilient muscle.

In addition to an enlarged left ventricle and a systolic apical murmur, two other physical manifestations occur so frequently that they must be included to complete the picture. They both have to do with the aorta and consist of an accentuation of the aortic second tone and a systolic basal murmur. This murmur is soft in quality, is heard best over the aorta or at least over the base of the heart, is not widely transmitted and is probably the result of a dilated aorta.

The diagnosis of hypertensive heart disease is, as a rule, simple to the degree of being elementary. The subjective symptoms are both characteristic and constant, and the physical signs appear early. The sphygmomanometer provides certified evidence. An estimation of the degree of heart involvement or impairment is, however, not always so simple.

In the first place, the extent of hypertrophy or spread of the left ventricle is no true criterion, since some hypertensives early in the course of their disease show considerable involvement, whereas others carry an increased vascular tension for years with little or no demonstrable physical evidence. In the second place, while it is unquestionably true, that a failing right ventricle bespeaks an incompetent left chamber, we have no index, delicate or otherwise, which predicates the arrival of this transition point. In some instances, a seriously embarrassed left ventricle carries on after a fashion for a very considerable time without overloading the right heart; in others, it relegates the overload quickly. We have, however, criteria, some subjective, others objective, which when augmented with definite laboratory findings provide a rather accurate clinical prognosis.

A severe degree of discomfort of any variety, directly attributable to the hypertensive heart, is of itself an unfavorable indication. Particularly is this so, if from the history we are observing the disease early in its course. Thus, marked heart consciousness on trivial exertion or dyspnea which prolongs itself appreciably into a period of rest speaks for considerable heart muscle strain. Particularly discouraging is the occurrence of spasmodic dyspnea while at rest. Contrary to common belief, this symptom is not restricted to the disease in its advanced stage, but is encountered sometimes quite early, and in those instances has a serious omen. The coexistence of the anginal syndrome with hypertensive heart disease also renders the outlook more dubious.

From a physical standpoint, we are able to gather further corroborative evidence bespeaking a poor prognosis. Beginning with the heart itself, we repeat that the degree of hypertrophy

is no index as to the reserve of the heart muscle. However, the heart does furnish considerable direct evidence as to its reaction to sustained hypertension. Thus, for example, the quality of the apex beat can be quite instructive. A good firm impulse or first sound clear, or muffled with a systolic murmur, it makes no great difference, bespeaks a potentially virile heart muscle; the antithesis means tire or fatigue. The rate and rhythm have prognostic significance. As regards the former, anything over one hundred per minute while at rest is undesirable. The rhythm of the hypertensive heart admits of several pertinent variations. While extrasystoles are common and friendly enough, if not too frequent, a gallop type of rhythm is ominous. The aorta, too, is deserving of careful scrutiny. A marked dilatation as certified by the orthodiagram, with a superimposed systolic blow suggests not only a yielding wall but also probably an arteriosclerotic undermining process as its mechanical factor. The question must naturally arise, what prognostic deductions can be made from the degree of hypertension itself? The answer proves more complex than should be suspected. It seems unnecessary to remark that a pronounced hypertention should be and is in fact, more alarming than one of negligible degree. However, even there in the matter of actual experience a definite ratio cannot be set up. For all too frequently the heart of the individual with a systolic pressure of 200 millimeters carries on as stoutly as that of another carrying a load appreciably less. For many years the matter of the diastolic phase was almost ignored in blood pressure study. Now as so frequently happens, the pendulum has rebounded to an unwarranted height. Both are important within their limitations. It is probably true that an inordinately high diastolic pressure, and therefore a low mean pressure, is an unfavorable situation. Certain it is that the subjective distress of many hypertensives is governed more by the gyrations of their diastolic than their systolic pressures.

The electrocardiograph, the X-ray and all other laboratory armamentaria individually and collectively, can be of greatest diagnostic and prognostic value. They must never attempt to compete with clinical observations carefully carried on. In the study of hypertensive heart disease the electrocardiograph has merited an importance place. Some of the evidence it provides is purely corroborative, thus for example, its left axis deviation coincides with the dimensions visualized in the orthodiagram and anticipated by the physical examination. Again it places on permanent record the ventricular extrasystoles or gallop rhythm encountered and noted over the heart and at the radial pulse. It rather definitely labels an otherwise occasionally ambiguous type of heart disease, as hypertensive, through the quite constant T-wave changes (Willius[4] reporting on a series of hypertensive hearts claims this constancy in forty-two per cent).

In addition to this corroborative evidence which of itself is both helpful and welcome, the electrocardiograph furnishes or suggests other information far more important. Thus, we are intensely interested in the amount of damage incurred by the muscle of the hypertensive heart. We have ample evidence of its increased size both clinically and through the orthodiagram, but as twice stated this is no index as to its potential capacity. It is true the subjective manifestations and diverse physical secondary signs give us a clue, the electrocardiograph however emphasizes and adds to our knowledge of myocardial damage. Finally and possibly most important of all, it suggests the presence or absence of pathological changes in the coronary vessels.

We come now to the matter of treatment. I am convinced that no type of heart disease calls for more radical measures, and in return yields better results. In some instances, it demands the revamping of an individual's entire social and economic structure, for moderation is the keynote of therapy in hypertensive heart disease.

Not only can the hypertensive individual's life be materially lengthened, but his days can be made happier, and his symptoms less prominent and annoying the while. It is true it demands a high degree of cooperation, and many sacrifices, and yet in most instances it does not call for invalidism. The management of hypertensive heart disease is basically twofold. On the one hand, it calls for active support of the heart and on the other, relief from excessive strain through diminution of existing hypertension. The attainment of neither is possible without moderation, mental calmness, and physical rest.

It is interesting to observe an intelligent person who has suffered a coronary insult and survived. Such an individual furnishes a beautiful example to any hypertensive. Not only his behavior but his entire mental reaction towards life has changed. He seems to understand the seriousness of his situation, seems to sense that he has approached perilously near the crater's edge, and so he cautiously backs away, and from then on calmly and serenely travels the middle path, and with a new and truer sense of proportions, refuses to be diverted by inconsequential annoyances and distractions. And so it must be with the hypertensive. He must revaluate himself and his life, make necessary adjustments and settle down to a degree of moderation and calmness consistent with his means of livelihood.

It is manifestly impractical to lay down any hard and fast rules, arbitrarily defining the amount of physical exertion permissible to individual hypertensives. The axiom, "stop short of physical fatigue," is logical, covers the average situation, and applies equally to work and to play. This advice sanely and safely regulates a man's occupation, his golf, his walking, swimming, etc., and prohibits entirely the more strenuous activities which by experience occasion an almost initial fatigue.

Of even greater importance than physical exertion is the matter of mental calm to the hypertensive. He must be taught mental poise. Anger, fear, unrest, worry and above all emotional explosions, are anathema. Going even further, brain fag, or mental fatigue, is undesirable and can be offset by an avocation, by developing an outside interest, thus obviating and preventing the depression and even the melancholia so common to chronic hypertensive cardiacs. If irascibility be made to yield to tranquility, hypochondria to apathy, melancholia to cheerfulness, then will much have been accomplished.

The individual with hypertensive heart disease requires more sleep, more bed rest than one not so afflicted. Whereas eight hours at night have previously sufficed, ten hours are now necessary, and twelve not excessive. If in addition, an afternoon rest period of one hour proves practical, the therapeutic effect is encouraging, both subjectively and objectively. The common, annoying and almost inevitably encountered insomnia must be dealt with patiently and experimentally, but must stop short of narcotics.

We come now to the matter of diet, and we might preface with the general statement that we are more concerned with the quantity or volume than with the type of food. Here again, moderation is the governing principle. The gastrointestinal tract must never be surcharged. Food should be simple and rather evenly distributed, preferably in at least four feedings, with no one outstanding big meal. It is particularly important that the last meal of the day, in the evening, be frugal and void of rich and undigestible foods. A gormand with a hypertensive heart is short-lived. Stimulants, alcohol, coffee and tea are restricted or prohibited. The allowance of tobacco is curtailed or entirely eliminated. Seasonings of all varieties are minimized to a point of compatibility with individual appetites, with the exception of salt which is entirely deleted. Sodium chloride has no place in the diet of the hypertensive heart. This statement in a different form is encountered so universally in the literature which deals with heart disease and hypertension, that it has been quite generally accepted. Some experimental work has been done to bolster the theory. A few years ago we[5] studied the result of a high sodium chloride intake on four types of individuals, viz:

1. Apparently normal persons with no evidence of cardiorenal vascular disease.
2. Nephritics.
3. Hypertensives.
4. Hypertensives with cardiac involvement.

Our findings were interesting and instructive and were briefly as follows: An increase in both the systolic and diastolic phase of pressure, in all four classes. The increase rose crescendic from one to four, and in that class was appreciable. Not only was there a pronounced elevation of tension in hypertensive cardiacs after the prolonged ingestion of three drams of sodium chloride daily, but the increased tension persisted for a varying number of months after its discontinuance.

We come finally to a consideration of the use of drugs in the management of hypertensive heart disease. Again a prefacing statement to wit, that we have no specific nor a near specific

to cover this situation. The therapeutic management of this disease will be twofold. It will embrace remedies to combat the hypertension itself, and others to support a tiring myocardium. The former comprises a rather formidable but unsatisfactory array of sundry drugs, of which probably the alterative, potassium iodide, merits mention, together with the diuretics, more specifically diuretin, theocin, and theocalcin. Of the last three, theocalcin seems to possess a worthwhile vasodilator action which often produces desirable results. For heart muscle support digitalis remains our sheet anchor. Not only does hypertension constitute no logical contraindication, but the subjective and objective results are most encouraging.

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## DISCUSSION

Dr. N. S. Davis (Chicago): I have been very much interested in Dr. Berghoff's excellent presentation. There are just two or three points I want to emphasize.

One early symptom of hypertension that he did not mention and that is quite commonly met with, is a gaseous distention of the abdomen as an early sign of cardiac failure.

Another thing that I feel we should study and concentrate on a great deal is an attempt to make an etiological diagnosis.

We are not going to get very far in the treatment until we know the cause of this condition and we certainly will not get anywhere so far as prevention is concerned. There should be a classification of both hypertension and arteriosclerosis similar to that of heart disease; that is on an etiological, physiological and anatomical basis.

A third point to mention is that there should always be a control period to find out what the normal blood pressure curve is before any therapy is attempted. There are tremendous spontaneous variations in blood pressures, and if we do not know how the curve is in a certain individual case, any method of treatment may seem to produce wonderful results if the patient is observed for only a few weeks or months.

Most of the articles on treatment of hypertension report cases that have not been followed for a sufficient period either before or after treatment is instituted. The normal blood pressure curve of the individuals has not been ascertained and treatment has not been followed for a sufficient length of time to demonstrate whether or not it produces any material changes in this curve.

Dr. S. E. Munson, Springfield: I was very pleased to hear this paper of Dr. Berghoff's. It is timely, although we have only three half-day programs in medicine, we have something in regard to hypertension. Yet, necessarily, all the time newer thoughts are coming to us and newer ideas of early diagnosis that are so important in these cases.

I was reminded yesterday, in meeting one of my medical friends, of this. He said, "Well, I had an examination the other day. You remember I came to you about two years ago when I thought I had some heart trouble." I think he had some drop beats.

He said, "I was in St. Louis about a week or two ago and had a careful examination, and nothing was found wrong with my heart," which opinion I gave him at that time. He was over-working.

He said, "I have seen quite a few heart cases just recently, and have had five cases of angina pectoris die in the last few weeks, without any observation before, called just when the patient had succumbed or shortly afterward." Of course, these were his conclusions without post-mortem findings.

I remarked to the doctor, and I emphasize it at this time, that it is very important we become hypertension-minded. The lower blood pressure is the one to which we pay more definite attention than we do the systolic. On the other hand, as the doctor very clearly brought out in his paper, I think probably twenty-five percent of heart cases that succumb from hypertension at a later time, may succumb from angina pectoris without definite symptoms. The cardiograph gives no symptoms. So we must, as I remarked to the doctor in regard to his cases, see these patients at an earlier time. Our picture must come to us sooner. As to these cases that die suddenly without any observation, that have probably been seen by various physicians, it is really unfortunate. I think if we would be more careful we would see some of the earlier symptoms and could probably guide these patients to a longer period of life.

Dr. Edward Bowe (Jacksonville): I am very much interested in Dr. Berghoff's paper because of my personal experience as some of you know.

This really is one of the great opportunities for physicians to do something in heart disease. There are two types of heart disease in which we can do something for a patient.

One is that type of heart disease in which the acute infections enter, and the second is the type which is under discussion by Dr. Berghoff.

McKenzie has put this subject in an understandable way to men who are doing clinical medicine. It is said when a person begins to become heart conscious it is then time to make a very thorough and comprehensive examination and determine your entire pathological complex.

I was sorry the doctor did not have time to go into this subject as a pathological proposition, because I can state from my own experience that is the ultimate solution of it. And until we can determine the etiology

and have a picture with the entire pathological complex we will never be able to get very far in treatment.

I was sorry the doctor did not discuss the question of pulse significance after a definite pathology was determined. He mentioned galloping rhythm, the pulse variation is important to men who are doing medicine in a casual way and have not the means he has of making an accurate diagnosis and observation.

For instance, in my own case, I have a pulse around forty-eight and fifty. And what is the pathology in a persistent low pulse? What is the pathology in a persistent galloping pulse? If you have a very definite picture of the pathology with which you are dealing, you will have a very definite idea of treatment, and probably prognosis.

I am sorry we haven't more time to discuss this paper. It is a subject in which, after two years of observation of nothing else, I am very much interested.

There is not a greater subject in medicine than the one which the doctor has presented. There is not a field in medicine—internal medicine—that affords the opportunity for younger men that the study of heart does.

We can bring it under two great classifications; first, that type in which the acute infections enter, and the resultant pathology in the general circulatory and renal systems following infection, and the type which the doctor discusses here where we do not recognize the etiology until the disease is fixed and well established. And your attention is not called to it until the patient receives some great shock with something like a renal involvement or coronary thrombosis, and he is then beyond rational care and treatment.

There is only one treatment for heart disease, and that is rest.

There is only one thing to do for a heart case and I will tell you from personal experience, and that is to be quiet.

Dr. Berghoff: When I prepared this paper on "Hypertensive Heart Disease" I found it absolutely impossible to keep down to fifteen minutes. My paper runs to practically thirty minutes. I could not help myself, the subject is so broad.

I did not get to treatment, but I feel strongly that in addition to being able to do a lot for our acute rheumatic young hearts, there are two other types we can do still more for—the hypertensive—probably more for that than any other except the heart of the aged.

The treatment of hypertensive heart disease itself is such a big subject that in two minutes I could not begin to try to cover it.

However, the keynote of the treatment of hypertensive heart disease is three-fold. It consists of physical rest or moderation, mental moderation, and moderation in the matter of food consumption.

I feel the average individual with a hypertension should feed himself four or five times a day, never taking a big meal. Most essentially he should not go to bed at night until three or four hours after a meal.

I cannot go into the matter of drug treatment at all.

I want to say also, the individual's mental reaction is all important. He should neither be melancholy nor must he be irascible. He must develop poise and mental calm.

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## SOME CIVIL LEGAL ASPECTS OF CHRISTIAN SCIENCE

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The object of this article is to ascertain and analyze some of the most unusual civil legal aspects of Christian Science. However, in order to understand this phase of the subject more thoroughly, it will be necessary to know beforehand something about Christian Science itself. Christian Science generally is known as a form of faith healing and mental therapeutics. It was founded by Mary Baker Eddy of Concord, New Hampshire, in the year 1866, and bases its teachings upon her writings, the most important of which is "Science and Health, with Key to the Scriptures." This book, popularly known as the Christian Science textbook, is simply a quasi-legal re-interpretation of the Bible as understood by Mrs. Eddy. Its theology is based upon the belief that all human ailments and diseases have no real existence and are merely false beliefs, illusions or "error of mortal mind" which can be destroyed by "Truth" through the operation of "Divine Mind" by knowing such to be the truth. It is the application of this fundamental doctrine of Christian Science by Christian Scientists and Christian Science practitioners[1] to themselves and to men, women and children who are actually suffering, or who merely believe that they are suffering from some mental or physical ailment or disease, which constitutes the practice of Christian Science.

*Belief in Christian Science.* The apparent irrationalism of Christian Science has led to several cases in which the legal rights and remedies of Christian Scientists have been questioned and even denied.

(A) *Not an Insane Delusion.* Matter of Brush[2] was decided in New York in 1901. In this case, the testatrix was a Christian Scientist.

1. One who is a specialized practicing Christian Scientist; has met and passed certain requirements of the "Mother-Church," the First Church of Christ, Scientist, of Boston, Massachusetts; is registered in the Christian Science Journal; has no other occupation or conflicting interest, and is entitled to charge a fee for his services.

2. 35 Miscel. 689, 72 N. Y. S. 421.

In her will, testatrix left a legacy of $20,000.00 to the First Church of Christ, Scientist, of New York City. Her relatives sought to have the legacy set aside on the ground that her belief in Christian Science was an insane delusion and that therefore she lacked testamentary capacity. The court decreed that the legacy was valid, and held that "however opposed these teachings (Christian Science) may be to the beliefs or notions of others, they are founded on the religious convictions of those professing them. That being so, the court cannot say that those persons are mentally unsound." The rule laid down in this case is that a belief in Christian Science is not an insane delusion.

(B) *Qualification as a Juror.* In re Malvasi's Estate[3] was decided in California in 1929. This case was a will contest, involving unsoundness of testator's mind. Mrs. Post, a Christian Scientist, was examined as a juror in this case, and was accepted. She joined with the other jurors in upholding the will. Later, counsel for the contestant discovered that Mrs. Post was a Christian Scientist, and made a motion for new trial on the ground that as a Christian Scientist, Mrs. Post did not believe in the existence of unsoundness of mind because it was a human disease, and that therefore she was disqualified as a juror. In an affidavit against the motion, Mrs. Post deposed that Christian Science was a healing agency and that it at all times recognized the existence of human disease, including mental incompetency. The court denied the motion, stating that Mrs. Post, *according to her conception of Christian Science,* "understood" Christian Science to recognize the existence of disease, including mental incompetency, and that therefore Mrs. Post was not disqualified as a juror and was also "not chargeable with any misconduct for failure to volunteer information concerning her religious belief and that appellant (contestant) was not deprived of a fair and impartial jury." There is no doubt that if Mrs. Post had the true conception of Christian Science, which is the non-existence of all human ailments and diseases, the court certainly would have ruled that she was disqualified as a juror in this case. Thus it can be seen that Christian Scientists are disqualified as jurors in personal injury cases and in all other cases in which human ailments and diseases, and mental suffering are the issues involved.

(C) *No Redress for Personal Injuries and Mental Suffering.* Probably the most interesting case that was ever decided on Christian Science is the case of Fort Worth & Denver City Ry. Co. vs. Travis.[4] This case was decided by the Texas Court of Civil Appeals in 1907. In this case, plaintiff brought suit to recover damages for his wife's personal injuries and mental suffering caused by her expulsion from one of the defendant's trains. At the trial, defendant's counsel sought to cross-examine plaintiff's wife to prove that she was a Christian Scientist and therefore was incapable of sustaining physical injury and mental suffering. The trial judge sustained plaintiff's objection to this cross-examination, and judgment of $190.00 was awarded plaintiff. Upon appeal, judgment was reversed, the court declaring that the trial judge "erred in treating the inquiry as an immaterial one, since the testimony was pertinent to the main and essential issue in the case, to-wit, the mental and physical suffering of the witness (plaintiff's wife). *If she had such control of her feelings or thought she had, as to render her insensible to pain when she willed to be, we see no reason why that circumstance should not have been considered by the jury in determining the extent of her suffering and the compensation to be made on account of it."* In substance, the holding in this case is that Christian Scientists can recover little or no damages for personal injuries, mental pain and suffering. This rule is also applicable to those cases in which a Christian Scientist brings suit for breach of promise, alienation of affections, seduction and other suits of like character in which mental suffering is the gist of the action. Notwithstanding the harshness of the effects of this ruling on Christian Scientists, it represents the overwhelming weight of authority in the United States.

*Civil Actions by Practitioners.* The only case ever decided by the higher courts relative to a practitioner bringing suit on a matter pertaining to Christian Science is the case of Wheeler vs. Sawyer[5] which was decided by the Supreme Court of Maine in 1888. In this case, a practitioner brought suit against his deceased pa-

3. 273 Pac. 1097.

4. 45 Tex. C. A. 117.

5. 15 Atl. 67.

tient's heir to recover $30.00 compensation for Christian Science treatments given to the patient shortly before his death. The court awarded judgment to the practitioner on the ground that patient chose that form of treatment and agreed to pay for it, and that there was "nothing unlawful or immoral in such a contract." The rule deducible from the reasoning of this case is that where a patient engages a practitioner, the latter can recover his fee for rendering Christian Science treatments in an action at law against the patient or his estate. However, in order to recover against a third party, that is, one who has not received the treatments, the practitioner not only must prove that the third party engaged him, but also had agreed to pay him for such Christian Science treatments. In the absence of such agreement, the practitioner cannot recover his fee even though the third party is legally responsible for the patient's disease or injury or mental suffering. The reason generally given in such cases for a third party's non-liability for a practitioner's fee, is that Christian Science treatments are not such treatments as will reasonably "relieve and cure" a human ailment or disease.[6]

## Negligence in Failing to Obtain Prompt Medical Care

*In General.* One who has sustained personal injury through the fault of another is under a duty to secure promptly the necessary medical and surgical advice and treatment, if the nature of the injury is such as reasonably to require it, so as to prevent or reduce aggravation of physical injury and mental suffering. If the injured party is negligent in allowing an unreasonable length of time to elapse between the date of the injury and the time medical and surgical care is resorted to, such negligence is regarded in the eyes of the law as a sufficient intervening cause, and may either bar in toto or reduce to a minimum the amount of damages that can be recovered from the party at fault.

(A) *Adult Christian Scientist.* The case of Ash vs. Barker et al. illustrates how the law applies to an adult Christian Scientist who is negligent in obtaining prompt medical care. This case is a workmen's compensation case and was decided in California in 1915. The applicant was a middle aged woman who managed an apartment house. In the course of her employment, she fell from a chair, severely injuring herself. From the date of her accident until forty days later, when she ended her employment on account of the unbearableness of her suffering, she relied solely upon Christian Science treatments by a practitioner to cure her injury. Shortly afterwards, she submitted to a surgical operation. The evidence showed that she should have taken the operation immediately after the accident. In holding that she was not entitled to compensation, the Industrial Commission declared that Christian Science treatments are not such as "may be reasonably required to cure and relieve where surgical treatment is indicated by the symptoms. In delaying such surgical treatment for more than two months, applicant not only jeopardized her own interests, but the interest of her employer, and in fact slept upon her rights to demand medical and surgical treatment at the expense of her employer or her employer's insurance carrier." The reason for this decision is quite obvious. The law imposes on an adult Christian Scientist the duty of acting as a reasonable and prudent person would act under the circumstances of this case. Here the applicant knew or ought to have known that her injury was of such a serious nature as to require immediate medical attention. Her failure to take such action within a reasonable time after the accident was considered the primary cause of the serious aggravation of her injuries.

(B) *Infant Christian Scientists.* The law, however, is not so harsh towards infant Christian Scientists of tender years, who have not reached the age of discretion, and who are entirely dependent upon the care given them by their parents or guardians, who are also Christian Scientists. A case on this point was decided in Connecticut in 1932.[8] In this case, plaintiff, an eight year old girl, was just stepping off the edge of the road, when she was struck by defendant's LaSalle sedan which was being driven at a very fast rate of speed. The most serious injury plaintiff sustained was a fractured and dislocated pelvis. Plaintiff and her mother were both Christian Scientists. On the day of the accident, a doctor was

6. Ash v. Barker, et al., 2 Cal. L. A. C. 577 (1915).
7. Cal. L. A. C577.
8. Lange v. Hoyt, 114 Conn. 590, 159 Atl. 575.

called. He gave plaintiff first aid treatments, and had her taken to the hospital where she was given treatment. Later in the same day, plaintiff's mother took her home against the doctor's warnings. For the next 25 days, no medical treatment was given plaintiff, except some nursing and orthopedic treatments. During this interim, plaintiff also was given Christian Science treatments. Plaintiff brought suit for damages, and her mother brought suit for expenses incurred. At the trial, the evidence showed that plaintiff had a permanent pelvic deformity which would interfere with normal childbirth. Defendant contended that plaintiff's injury was aggravated by her not having the proper surgical treatment during the 25 day period, and that proper surgical care from the beginning would have effected a substantial cure. The court upheld judgment for the plaintiff declaring that "while the test of conduct on the part of plaintiff in promoting a recovery from injuries suffered is one of reasonable care, and cannot be made to depend upon the idiosyncrasies of personal belief no matter how honestly held. . . . A child of the age of eight years is necessarily dependent upon her parents as regards the steps to be taken to bring about a recovery from an injury, and if she is not herself guilty of negligence or improper conduct, the failure of the parents to take the proper steps to that end, by a parity of reasoning, cannot be such a cause of any portion of the injuries as will defeat a recovery for all the results of the defendant's wrongdoing." There can be doubt that had the delay in this case been somewhat greater than 25 days, the plaintiff here would have recovered very little damages. The trial judge in this case had instructed the jury very favorably for the defendant insofar as the mother's claim was concerned. In reviewing this point, the Supreme Court of Connecticut strongly intimated that such instruction was justified by the facts of this case.

*Civil Actions Against Practitioners.* Dissatisfaction with the results of Christian Science treatments given by practitioners, and general dislike and distrust of practitioners, together with wrongful conduct on the part of practitioners, has led patients, their relatives and individuals to institute legal proceedings against practitioners for malpractice, deceit, divorce and fraud.

(A) *Malpractice and Deceit.* The case of Spread v. Tomlinson[9] was decided by the Supreme Court of New Hampshire in 1904. In this case, plaintiff, a middle aged woman, had an attack of appendicitis. She informed defendant, a practitioner, of the nature of her trouble and her dread of a surgical operation. Defendant told plaintiff that a surgical operation was unnecessary and that he could cure her by Christian Science treatments. Plaintiff employed the defendant for several days, during which time her illness increased. She finally placed herself in the hands of a physician, submitted to a surgical operation, and was cured. Plaintiff brought suit against the practitioner for "malpractice" and deceit. The evidence tended to show that the defendant's "treatment" was injurious to the plaintiff, and that if it had been persisted in, a cure would have been impossible. The court found for the defendant, declaring that one who holds himself out as a Christian Science practitioner and is employed to treat any human ailment or disease according to the methods followed by such practitioners, is only required to possess the "knowledge" and to "exercise the skill" of the ordinary practitioner, and that there was "nothing here to show that defendant failed to do so in giving Christian Science treatments to the plaintiff." The court further stated that "it is a matter of common knowledge that honest men, not only in the past, but do now, entertain religious beliefs which appear to the great majority of their fellow men both unsound and incapable of belief," and that defendant's representations were not fraudulent, but merely a strong expression of a religious opinion based on his apparently sincere belief in Christian Science."

(B) *Divorce.* Surprising as it may seem, a married person may obtain a divorce on the ground that his (or her) spouse is a Christian Science practitioner. Such a decision was rendered by the Supreme Court of New Hampshire in the case of Robinson v. Robinson.[10] In this case, the husband was a druggist. He and his wife were a very happy and loving couple until two years after their marriage, when his wife became interested in Christian Science and became a "Doctor of Christian Science." Her

9. 73 N. H. 46.
10. 66 N. H. 600 (1891).

practice of giving Christian Science treatments caused the husband to be ridiculed. As a result, his business suffered, his health became impaired and he became morose and despondent. He begged his wife to give up only her practice of Christian Science and not her belief, but she refused. He thereupon brought suit for divorce on the grounds of extreme cruelty. The court declared that the husband was entitled to a decree of divorce because the wife's conduct as a Christian Science "Doctor" came within the terms of the statute as such behavior on her part as to have the effect of endangering the health and *reason* of her husband.

(C) *Fraud.* An action can be maintained against a Christian Science practitioner for fraud by relatives of a deceased patient who was defrauded by the practitioner. This is the holding of the case of Christian v. Canfield[11] which was decided in New Jersey in 1931. The facts in this case were as follows: Miss Christian died at the age of 67, being a confirmed invalid for over 25 years. For several years prior to her death, she relied exclusively upon Christian Science treatments given by defendant, a "Christian Science healer." After Miss Christian's death, her relatives brough suit in equity to set aside two instruments made by Miss Christian which conveyed securities valued at $13,730.00 as a gift to defendant, on the ground that the instruments were secured by fraud and undue influence. The evidence showed that defendant had charge of Miss Christian's financial affairs, and that the latter was under the influence of opiates at the time that the instruments were executed. In entering a decree in favor of the relatives, the court declared, "at the outset, we start with the presumption against the bona fides of transaction because of the confidential and fiduciary relationship, and the burden of showing the contrary is upon the beneficiary. That includes the burden of showing not only that the transfer was not procured by fraud or undue influence, but that the nature of the transaction was fully understood by decedent, and that she had independent advice."

11. 108 N. J. Eq. 547.

## NEW ANESTHETIC MADE OF NATURAL GAS COMPOUND

St. Petersburg, Fla.—(S. S.)—Cyclopropane, a gaseous anesthetic which is becoming popular in some hospitals because its use is not followed by nausea and also because it is relatively safe from explosion, has been prepared cheaply from certain constituents of natural gas, by three Purdue University chemists, Dr. H. B. Hass, E. T. McBee and G. E. Hinds. At the meeting of the American Chemical Society here they reported on the process by which they have lowered its cost to a fraction of what it used to be.

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Dinitrophenol; its therapeutic and toxic actions in certain types of psychiobiologic underactivity. J. H. Masserman and Harry Goldsmith (Psychopathic Hospital, Baltimore City Hospitals, Baltimore, Md.), J. A. M. A. 102:523-525 (February 17, 1934) No. 7.

Eighteen patients, between the ages of 18 and 40 years of age, and free of gross organic disease, but who during the previous year had changed from an outwardly satisfactory and adaptable mental state to one characterized by listlessness, indifference, mild depression and otiose lethargy, were treated with sodium dinitrophenol to determine the effect of the drug on the subnormal metabolic rates found in these apathetic psychiatric patients. In therapeutic doses the drug caused a rise of 29.6-36.1% in the rate of oxygen consumption and a mean weight-loss of 92/100 pound (417 gm.) per week. Toxic effects occurred in five cases and were characterized by a fall in blood pressure, tachycardia, acidosis, progressive stupor and one death. Indeterminate or adverse psychotherapeutic effects were observed in eight and four cases respectively, while six patients showed a definite improvement in their mental state, apparently attributable to the medication. They conclude that, "Dinitrophenol is therefore unpredictably toxic to some patients, but its careful administration may be of empirical benefit in certain types of recent and in securely established psychobiologic underactivity."

Toxicity of dinitrophenol. Reply to an inquiry by the editor, J. A. M. A. 102:562 (February 17, 1934) No. 1.

"Dinitrophenol appears in the urine promptly and is rapidly excreted, probably within one or two days after administration. Its fate in the body is not certain, but possibly a part is converted to the less toxic aminonitrophenol. Continuous administration for as long as six months has not resulted in perceptible harm to the liver or other vital organs. The only alleged liver damage so far reported in patients is one case in which a physician undoubtedly mistook the yellow color of the dye dinitrophenol for bile pigments. In this case the supposed evidence of liver injury disappeared at once when the drug was discontinued. So far, it is not known whether continuous administration over periods of years might be harmful, but it is significant that workers engaged in making it during the War, when there was continuous exposure for several years at a time, did not show evidence of injury to the liver or other vital organs."

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Metabolic actions of dinitrophenol with the use of balanced and unbalanced diets. W. C. Cutting and M. L. Tainter (Departments om Medicine and of

Pharmacology, Stanford University School of Medicine, San Francisco, California), J. A. M. A. 101:2099-2102 (December 30, 1933) No. 27.

The effects of alpha-dinitrophenol (1-2-4) administered by mouth for period from 7-16 days on basal metabolism, nitrogen balance, urinary organic acids, and body weight, were studied in four subjects on balanced diets and on diets unbalanced by including maximal amounts of carbohydrate, fat or protein. The caloric values of the diets were adequate for the normal metabolism of the subjects. With the diets, the basal metabolism was increased by from 30-50% during medication. The patients excreted less nitrogen than they ingested, yet there were definite losses of weight; body proteins were probably not broken down. The output of urinary organic acid was not increased, thus indicating that the fats were completely burned without giving rise to acidosis. Dinitrophenol may therefore increase the metabolism in man, regardless of the energy materials of the diet, although it primarily promotes burning of carbohydrates or fat. Clinically the drug is indicated in the treatment of obesity, but may be used therapeutically in other disease states with depressed metabolism. Its main advantages over thyroxine or powdered thyroid would seem to be a prompt and vigorous rise of metabolism and an absence of disturbing subjective symptoms.

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An ear complication from dinitrophenol medication. H. Dintenfass (Philadelphia, Pa.), J. A. M. A. 102:838 (March 17, 1934) No. 11.

A young woman aged 28, weight 150 pounds (68 kg.) was given a 5 grain (0.3 gm.) capsule of alpha-dinitrophenol orally once a day. Immediately following the first capsule a burning sensation in the throat was experienced, followed by profuse perspiration, dull headache and bodily weakness. After four days, 20 grains (1.3 gm.) had been taken; the symptoms increased. There was severe exhaustion, rash on the chest, extreme dizziness, fullness and pain in both ears. The drug was discontinued, and all symptoms disappeared except the pain and fullness of the ears, which became more aggravated, and considerable impairment of hearing developed (about 30%). After an interval of a month, the drug was given again in similar doses; after 15 grains (1 gm.) had been administered, it was necessary to discontinue its use due to recurrence of all previous symptoms. There was no appreciable loss in weight at any time. Seven months after final discontinuance of the drug, the pain and discomfort in the ears disappeared, but there is still considerable impairment of hearing.

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Report of a toxic manifestation due to "Dinitrenal." Sidney Hirsch (Cedarhurst, Long Island, N. Y.), J. A. M. A. 102:950 (March 24, 1934) No. 12.

A woman, aged 32, with negative previous history, developed generalized mottled eruption with violent itching centering in the palms of the hands. Ten days previously she had taken two capsules daily of "Dinitrenal" (Drug Products Company, Long Island City. Each capsule is stated to contain dinitrophenol sodium, gr. 1½; suprarenal desiccated, gr. ⅛; Carbo vegetalis). At the end of a week the dosage was increased to four capsules daily in accordance with the instructions on the label. Physical examination revealed moderate swelling of both hands. The temperature was 99.6° F., the pulse rate 80. Examination of the urine was negative. The pruritis was resistant to all forms of treatment, and so severe that the patient was unable to sleep for six full days in spite of strong somnifacients. The pruritis gradually disappeared.

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## CODE FOR SCHOOL CHILD SIMPLIFIES CARE FOR MOTHER

A code affecting the daily routine of school children's lives is being evolved by Health Commissioner Shirley W. Wynne of New York City as a phase of the present code-building activity of mankind.

He supplements the usual attentions given the physical equipment of the school-age child by careful and well informed parents with the following simple code for good management of young lives. For example, he says, every mother should ask herself:

"Do I give thought to my child's sleeping hours?

"Do I insist that my child rest every afternoon?

"Do I know how to use a quart of milk a day in my child's meals?

"Do I know why I should give him a wide selection of vegetables and fruits?

"Am I sure that my child gets his share of sunlight (or its substitute)?

"Do I give my child plenty of time between breakfast and time for school to develop important health habits?

"Do I know why my child should have clean hands and regular baths?

"Do I weigh and measure my child regularly to know if he is growing as he should?

"Do I know why I should take my child regularly to the doctor and dentist?"

"Replace the child's restraining rope by a spacious yard, boxes and planks for building, climbing and balancing in order to satisfy the child's curiosity for experimentation and construction."—*School Physicians' Bulletin.*

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## HOW TO BECOME WEALTHY

In a New Hampshire city there dwells an octogenarian physician, who, in addition to his wide medical skill, is known far and wide as a composer of blunt philosophy. The other day a young man of his acquaintance called at the office.

"I have not come for pills this time, doctor," said the visitor, "but for advice. You have lived many years in this world of toil and trouble, and have had much experience. I am young, and I want you to tell me how to get rich."

The aged practitioner looked through his glasses at the young man, and in a deliberate tone, said:

"Yes, I can tell you. You are young, and can accomplish your objects if you will. Your plan is this: First be industrious and economical. Save as much as possible, and spend as little. Pile up the dollars and put them at interest. If you follow out these instructions, by the time you reach my age you will be as rich as Croesus—and as mean as h—l."

Teacher: "Robert, explain what are the functions of the skin."

Bobby: "The chief function of the skin is to keep us from looking raw."

## Society Proceedings

### COOK COUNTY

### CHICAGO MEDICAL SOCIETY

*Regular Meeting, Wednesday, November 7, 1934*

GENERAL PRACTITIONER'S NIGHT

Appendicitis:

Its Early Recognition in General Practice—Leroy H. Sloan, Associate Professor of Medicine, Rush Medical College.

Apparent Increase of Mortality Rate and Its Causes—John O. Bower, Clinical Professor of Surgical Research, Temple University School of Medicine, Philadelphia.

Surgical Problems in Acute Appendicitis—Karl A. Meyer, Medical Superintendent, Cook County Hospital.

Discussion: Joseph Brennemann, Milton Portis, Carl B. Davis, Hugh McKenna, George deTarnowsky, Frederick Dyas.

*Regular Meeting, Wednesday, November 14, 1934*

LAY EDUCATIONAL PROGRAM

You and Your Germs:

Natural Resistance to Germs—Lloyd Arnold, Professor Bacteriology and Preventive Medicine, University of Illinois.

Man's Conquest of Germs—Logan Clendening, Professor Clinical Medicine, University of Kansas.

*Regular Meeting, Wednesday, November 21, 1934*

AMERICAN MEDICAL ASSOCIATION NIGHT

"Plans for Economic Security"—Walter L. Bierring, President.

"The Health Insurance Program"—William C. Woodward, Director, Bureau of Legal Medicine and Legislation.

"Some Suggestions Toward Medical Cooperation"—Edward H. Carey, Past President.

## Marriages

ALONZO NEWTON BAKER to Miss Esther McLaren, both of Marion, Ill., October 25.

ARTHUR E. PERLEY, Quincy, Ill., to Miss Ruth Buss in September.

## Personals

Dr. Ralph H. Kuhns, formerly Director of Research at the Illinois State Psychopathic Institute, has been appointed Instructor in Neuropsychiatry at the University of Illinois, College of Medicine.

Dr. Max Thorek addressed the Ohio State University Medical School in the forenoon of November 26, and in the afternoon the Academy of Medicine of Columbus. The subjects were "Electrosurgery in the Treatment of the Carcinoma of the Rectum" and "Electrosurgical Obliteration of the Gallbladder" respectively.

Dr. Aaron Arkin has been promoted to associate clinical professor of medicine at Rush Medical College.

The Christian County Medical Society was addressed in Taylorville, October 24, by Dr. Max S. Wien, Chicago, on "Relation of Dermatology to General Medicine."

At a meeting of the Will-Grundy County Medical Society, October 24, Dr. Edwin W. Hirsch, Chicago, discussed "Pathology, Diagnosis and Treatment of Prostatic Hypertrophy."

At a meeting of the Chicago Pathological Society, November 12, speakers included Dr. H. Gideon Wells and Maud Slye on "Tumors of Islet Tissue with Hyperinsulinism in a Dog."

Speakers before the Chicago Gynecological Society, November 16, included Drs. Gustav Kolischer and Arthur H. Curtis on pathologic features of the female urethra and bladder, respectively.

Speakers before the Pike County Medical Society in Barry, October 25, were Drs. Edwin P. Sloan on thyroid deficiencies and Andrew J. Casner, types of pneumonia and their significance; both physicians are from Bloomington.

Members of the faculty of the University of Iowa College of Medicine, Iowa City, presented the program before the La Salle County Medical Society in Ottawa, October 18; Drs. Dean M. Lierle discussed the common cold and Nathaniel G. Alcock, diathermy in treatment of enlarged prostate.

Dr. Joseph L. Miller will deliver the presidential address at the nineteenth annual meeting of the Institute of Medicine of Chicago, December 4; his subject will be "The Influence of Claude Bernard's Experimental Methods on Medicine."

Dr. Bernard H. Nichols, Cleveland, addressed the Chicago Roentgen Society, November 8, on "Value of Roentgenologic Examination in Right Abdominal Pain," and Dr. William E. Anspach, "Atelectasis, Bronchiectasis and the Triangular Shadow in Children."

Dr. Dean Lewis, professor of surgery, Johns Hopkins University School of Medicine, delivered the third E. R. DeBoth Memorial Lecture at Rush Medical College, November 6, "The Story of the Hypophysis."

Dr. James J. Walsh, Camp Custer, Mich., has been named head of the medical department of the Veterans' Administration Facility at Danville, succeeding Dr. Aldine E. Morgan, who is being transferred to Oregon.

Dr. Achille Mario Dogliotti, professor of surgery, Royal University of Turin, Italy, addressed the Italian Academy of Medicine of Chicago and the staff of the American Hospital, October 22, on "Ventriculography" and "Treatment of Facial Spasm."

The Chicago Laryngological and Otological Society was addressed, November 5, by Drs. Andrew C. Ivy on "Physiology of the Labyrinth"; Sherman L. Shapiro, "Pseudocerebellar Abscess," and Francis L. Lederer, "Hemorrhage in Lung Cancer."

Speakers before the Institute of Traumatic Surgery, November 19, were Drs. Edson B. Fowler, Evanston, Ill., and Harry R. Hoffman on "A New Operation for Habitual Dislocation of the Shoulder" and "Traumatic Neuroses," respectively.

Carlos I. Reed, Ph.D., assistant professor of physiology, University of Illinois College of Medicine, addressed the Chicago Club for the Study of Arthritis, November 7, on "Metabolic Changes in Arthritis Patients Under Viosterol Therapy."

At a meeting of the Iowa and Illinois Central District Medical Association in Moline, October 31, Dr. Foster Kennedy, New York, discussed "The Interdependence of Neurology, Psychiatry and General Medicine," and Dr. Grandison D. Royston, St. Louis, "The Care of Obstetrical Damage to the Cervix and Pelvic Supports."

Dr. Carl E. Badgley, professor of surgery, University of Michigan Medical School, addressed the Chicago Orthopedic Club, November 16, on "The Value of the Thrust Graft in Atrophic and Sclerotic Nonunion." Mr. Maurice A. Bernstein also spoke on "Cysts of the Semilunar Cartilage."

Speakers before the Peoria City Medical Society, November 6, were Drs. Clarence Baxter Brown on "Ectropic Pregnancy"; Emil Z. Levitin, "Schizophrenia"; William A. Hinckle, "Anatomical Causes of Proctologic Pathology," and Harry A. Durkin, "Prognostic Consideration of Heart Diseases."

Dr. Clifford G. Grulee gave a public lecture, November 22, one of a series sponsored by the Chicago Heart Association on "The Spoiled Child in Heart Disease." Dr. Newell C. Gilbert opened the series, November 8, with a discussion of the principal causes of heart disease.

A dinner was held in honor of Dr. Henry S. Houghton, director of clinics and associate dean of the Division of Biological Sciences, University of Chicago, November 5. Dr. Houghton recently resigned to become advisory representative of the China Medical Board of the Rockefeller Foundation. Speakers at the dinner included Frederic C. Woodward, LL.D., vice president of the university; Frank R. Lillie, dean, and Dr. Dallas B. Phemister, professor of surgery in the division.

## News Notes

—At a meeting of the Chicago Surgical Society, November 2, speakers included Drs. William F. Reinhoff, Jr., Baltimore, on "Total and Partial Pneumonectomy," and Fremont Chandler and Eric Oldberg, "Extrapyramidal Tract Section for Congenital Spasticity with Athetosis."

—The Rockefeller Foundation has made a grant of $50,000 to the University of Chicago to carry on biologic research. This is an increase over the annual grant of $30,000 which the foundation has given to the university for the last five years. The additional $20,000 will be used to cover the expenses of the sex research

program, which until this year has been financed by the committee on research in problems of sex of the National Research Council.

—The Illinois State Department of Health calls attention to the fact that silver nitrate solution is not being used as contemplated by the law enacted last year requiring the use of this material in the eyes of all new-born children. The department furnishes this solution without cost. Four counties in the state have obtained no silver nitrate solution at all from the department this year, and nearly a dozen others have obtained only insignificant amounts.

—The state department of health and the Illinois State Dental Society are cooperating in a fall and winter dental health survey of school children. Diet and periodic dental inspections with the aim of preventing tooth decay will be emphasized. In the educational program to coincide with the survey, prenatal care, especially from the standpoint of the diet of prospective mothers, and the diet of children will be particularly stressed in connection with efforts to prevent dental decay. The periodic inspection of teeth and the prompt correction of caries were also emphasized.

—The Hebrew University Society was recently organized with Dr. Maurice Lewison as president. The purpose of the society is to support the Hebrew University in Palestine, particularly the university hospital and medical center, which is being built on Mount Scopus. Other officers are Drs. Alfred A. Strauss, vice president; Mayer H. Lebensohn, treasurer, and Charles Newberger, secretary. The society is affiliated with the American Jewish Physicians Committee of New York, of which Dr. Nathan O. Ratnoff is president and Dr. Emanuel Libman is chairman of the executive committee.

—Dr. Joseph B. De Lee, founder of the Chicago Lying-In Hospital, was presented with the Jesse L. Rosenberger Medal by the University of Chicago, October 28, in "recognition of his great service to humanity and of his life-time of untiring devotion to his profession and his widespread influence on the practice and teaching of obstetrics." The presentation was made during a celebration given by the hospital board and the Mothers' Aid Club, observing the thirtieth anniversary of the latter and the sixty-fifth birthday of Dr. De Lee. A graduate of Northwestern University School of Medicine, 1891, Dr. De Lee is professor of obstetrics and gynecology at the Division of Biological Sciences, University of Chicago. In 1895 he founded the Chicago Lying-In Hospital, which, since 1927, has been affiliated with the University of Chicago. Formally dedicated in 1931, the building cost $1,900,000 and has a capacity of 157 beds.

—At the sixtieth annual meeting of the Southern Illinois Medical Association in Mount Vernon, November 1-2, the following speakers were included on the program:

Dr. James J. Donahue, East St. Louis, Obstruction at the Pylorus.

Dr. Gershom J. Thompson, Rochester, Minn., Transurethral Prostatic Resection.

Dr. Percy H. Swahlen, St. Louis, Obstetrics.

Dr. Fred Z. Havens, Rochester, Minn., Malignancies About the Face.

Dr. Charles S. Skaggs, East St. Louis, What Is the Future of Medicine?

Dr. Frederick O. Fredrickson, Chicago, Analysis of Gastro-Intestinal Complaints With Reference to Diagnosis.

Dr. Harry Phillips, Anna, Modern Advances in Serology.

Dr. John B. Moore, Benton, Fractures.

Dr. Duncan D. Monroe, Edwardsville, The Home Treatment of Tuberculosis.

Dr. James S. Johnson, Cairo, Eye Injuries.

—Dr. Richard Jaffe, Director of the Pathology Laboratory, Cook County Hospital, will conduct pathological conferences on the pediatric material from the Children's Department, Cook County Hospital on the following dates: December 14th, 1934, January 11th, February 8th, March 8th, April 5th and May 3rd, 1935.

Conferences begin at 1:00 P. M. and end at 2:00 P. M.

—Diphtheria is not only much more prevalent but it appears to be also decidedly more fatal than last year. During September of this year, for example, one in each 10 cases reported terminated fatally whereas in that month of 1933 all but 1 in each 13 patients recovered. This fact emphasizes the importance of early diagnosis and the prompt use of antitoxin in cases of this disease. There were 15 deaths from diphtheria in September of this year against 8 in that month

of 1933. For October there were over 300 cases reported this year against 186 last. Sharp outbreaks have appeared during recent weeks in Alexander, Jefferson, Kankakee, Madison, Randolph, Vermilion and Wabash Counties.

—At the meeting of Southern Illinois Medical Association, November 1-2, the following officers were elected for 1934-35: President, I. L. Foulon, East St. Louis; 1st vice-president, T. S. Templeton, Pinckneyville; 2d vice-president, G. C. Otrich, Belleville; secretary-treasurer, Ben Fox, West Frankfort; assistant secretary, G. C. Otrich; censors, H. A. Cables, East St. Louis, Andy Hall, Mt. Vernon, and Walter Wilhelmi, East St. Louis.

## Deaths

Arthur Seymour Alderson, Thayer, Ill.; Bennett College of Eclectic Medicine and Surgery, Chicago, 1906; aged 64; died, October 3, in St. John's Hospital, Springfield, of cerebral hemorrhage.

Otis Wood Allison, Danville, Ill.; Rush Medical College, Chicago, 1905; a Fellow, A. M. A.; aged 57; on the staff of the Lake View Hospital, where he died, October 28, of aplastic anemia and acute myeloid leukemia.

Herman Earhart Almes, Chicago; Cleveland College of Physicians and Surgeons, Medical Department of the University of Wooster, 1889; a Fellow, A. M. A.; Western Pennsylvania Medical College, Pittsburgh, 1890; aged 66, died, October 13, of carcinoma.

Ernest C. Blanck, Park Ridge, Ill.; Jenner Medical College, Chicago, 1907; aged 72; died, October 10.

William Ralph Eddleman, Anna, Ill.; University of Tennessee, College of Medicine, 1912; aged 46; died, October 17, from injuries received in an automobile accident.

Joseph W. Enos, Chicago; Hahnemann Medical College and Hospital, Chicago, 1881; aged 76; died, October 11, of chronic myocarditis.

John C. Furlong, Spring Grove, Ill.; Rush Medical College, Chicago, 1891; member of the Illinois State Medical Society; past president of McHenry County Medical Society; aged 71; died, October 8, in the Mercy Hospital, Janesville, Wis., of injuries and shock following an automobile accident.

Elmer Edgar Grable, Chicago; National Medical University, Chicago, 1909; aged 73; died, October 17, of carcinoma of the liver.

James Warren Hamilton, Mount Vernon, Ill.; Barnes Medical College, St. Louis, 1895; member of the House of Delegates of the American Medical Association, 1914-1915; member of the Illinois State Medical Association; aged 63; died, August 24.

Albert O. Hollie, Chicago; Chicago College of Medicine and Surgery, 1911; aged 53; died, October 14, of gastric ulcer and hemorrhage and nephritis.

Leander D. Keith, Anna, Ill.; Hospital College of Medicine, Louisville, Ky., 1896; member of the Illinois State Medical Society; aged 69; died in October as the result of a fall from a third-story window of the Missouri Baptist Hospital, St. Louis.

Leo Charles Kinsella, Chicago; Chicago Medical School, 1923; member of the Illinois State Medical Society; aged 52; was found dead, October 24, of carbon monoxide poisoning.

Lewis Linn McArthur, Chicago; Rush Medical College, Chicago, 1880; a Fellow, A. M. A.; member of the Colorado State Medical Society and the Society of Clinical Surgery; member and past president of the American Surgical Association; member and formerly chairman of the American section, International Surgical Congress; past president of the Chicago Medical Society; fellow of the American College of Surgeons; since 1886 chief surgeon of St. Luke's Hospital and consulting surgeon to the Michael Reese Hospital; consulting surgeon to the Grant and Evanston (Ill.) hospitals; was commissioned a major in the Medical Reserve Corps in 1917 and director of Base Hospital, number 14; Chevalier of the Order of Leopold of Belgium; aged 76; died suddenly, November 5, of heart disease.

Roy H. McKnight, Kansas, Ill.; Dearborn Medical College, Chicago, 1906; aged 52; was found dead, October 1, of a self inflicted bullet wound.

Frank A. Metcalf, Chicago; Hahnemann Medical College and Hospital, Chicago, 1897; formerly professor of materia medica and internal medicine at his alma mater; on the staff of the Jackson Park Hospital; aged 61; died, October 20, of essential hypertension and cerebral thrombosis.

William C. Mitchell, Bradford, Ill.; St. Louis College of Physicians and Surgeons, 1904; served during the World War; aged 59; died, September 21, in the Veterans' Administration Facility, Hines, of lethargic encephalitis, parkinsonian syndrome and bronchopneumonia.

Robert William Oakley, Moline, Ill.; Northwestern University Medical School, Chicago, 1902; served during the World War; aged 59, died, October 18, in the Moline City Hospital.

Robert Alexander Twitchell, East St. Louis, Ill.; American Medical College, St. Louis, 1890; member of the Illinois State Medical Society; aged 77; died, September 21.

Leon Joseph Witkowski, Chicago; Northwestern University Medical School, Chicago, 1907; a Fellow, A. M. A.; on the staff of the Englewood Hospital; aged 51, died, October 14, of cerebral emboli and renal calculus.

Samuel Yoffe, Chicago; Chicago College of Medicine and Surgery, 1916; aged 44; died, October 19, in the University of Pennsylvania Hospital, Philadelphia, of pneumonia.

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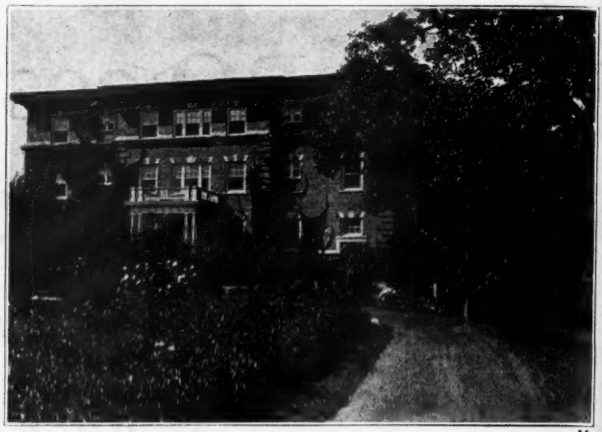

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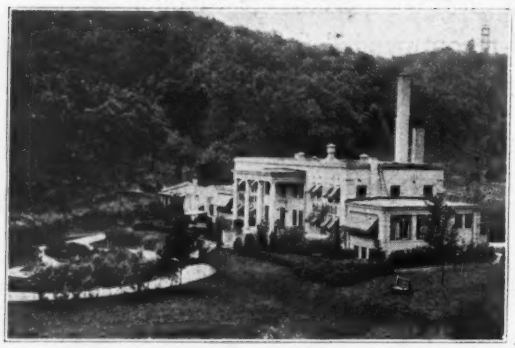

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